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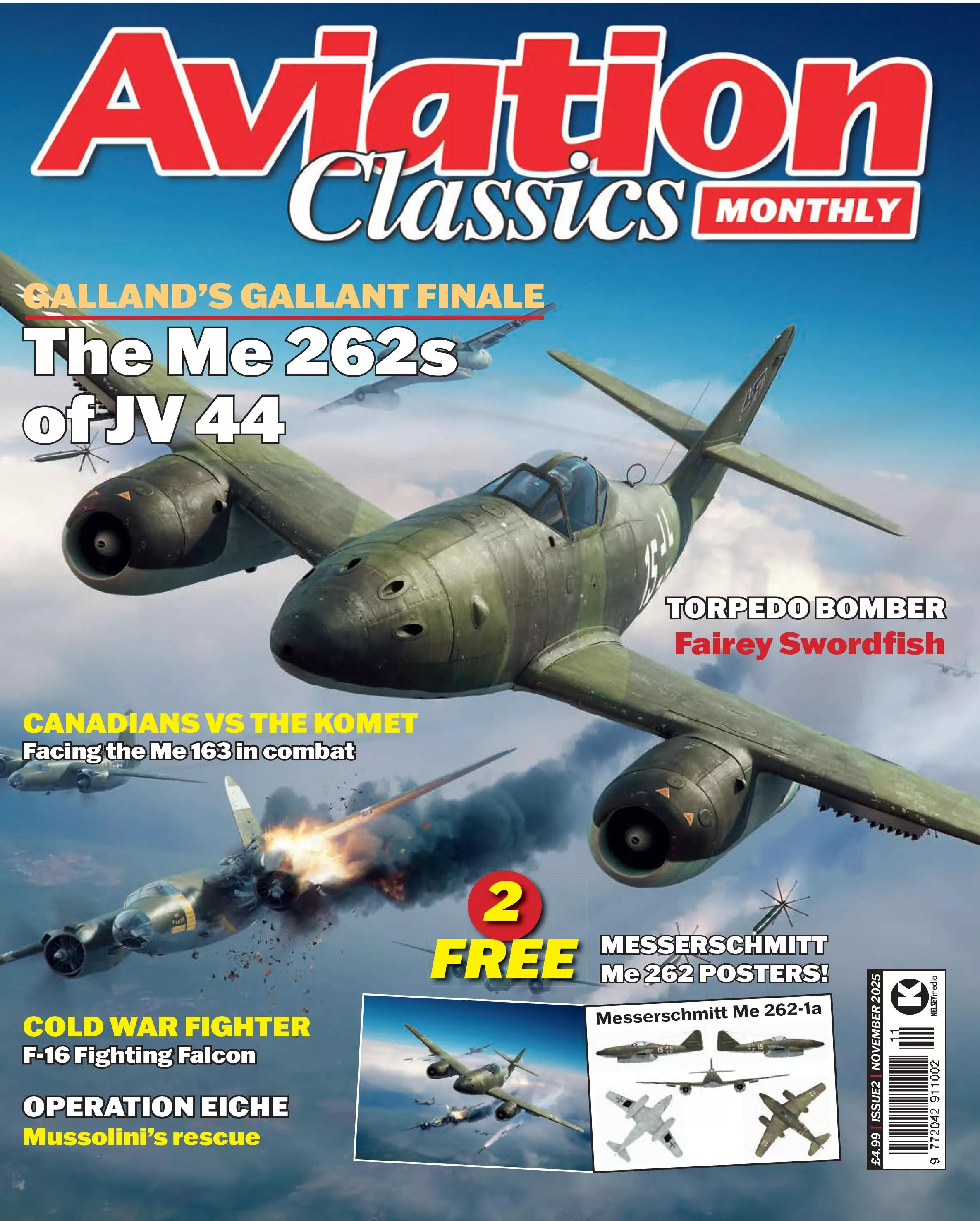

GALLAND'S GALLANT FINALE

The Me 262s of JV 44

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Fairey Swordfish

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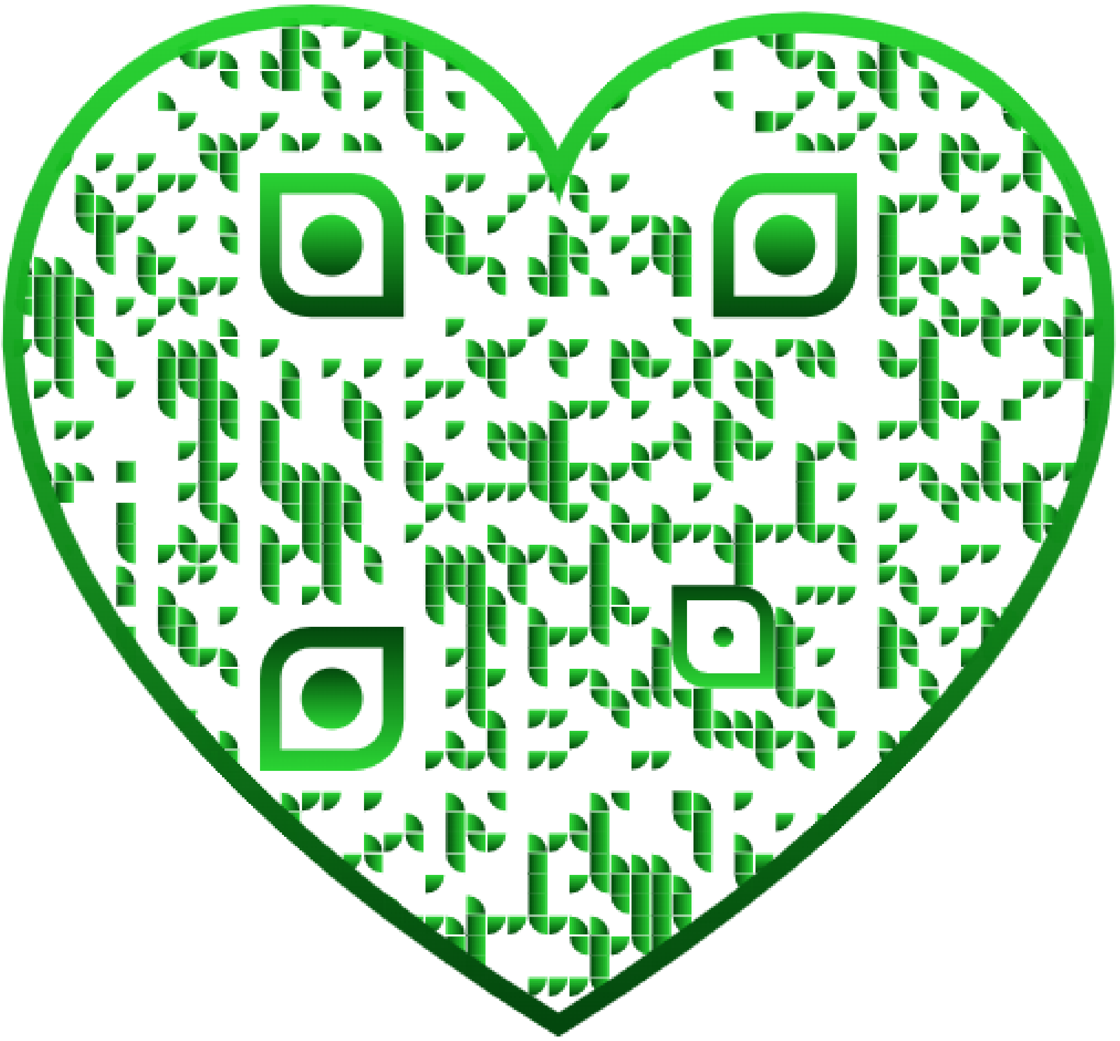

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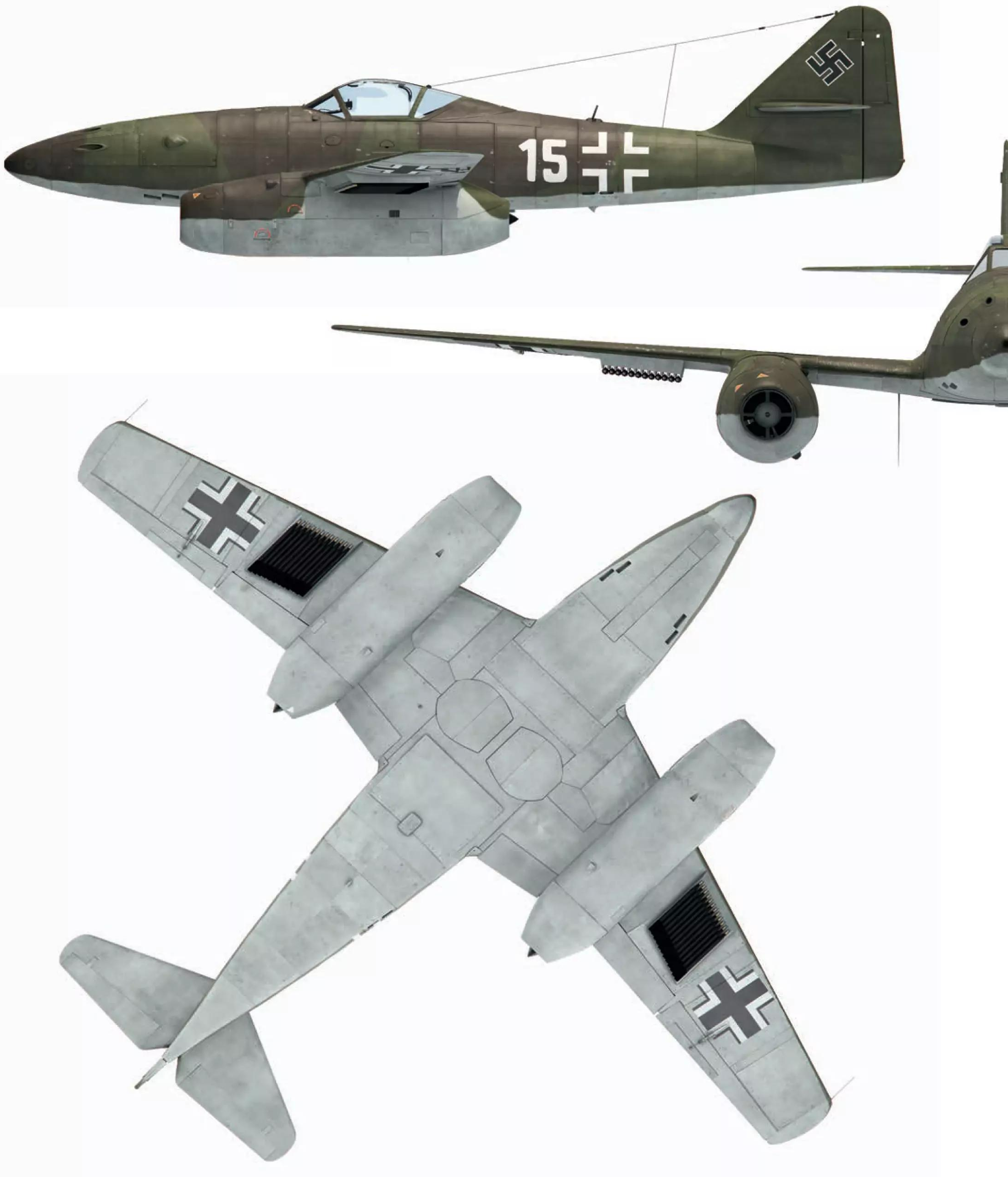

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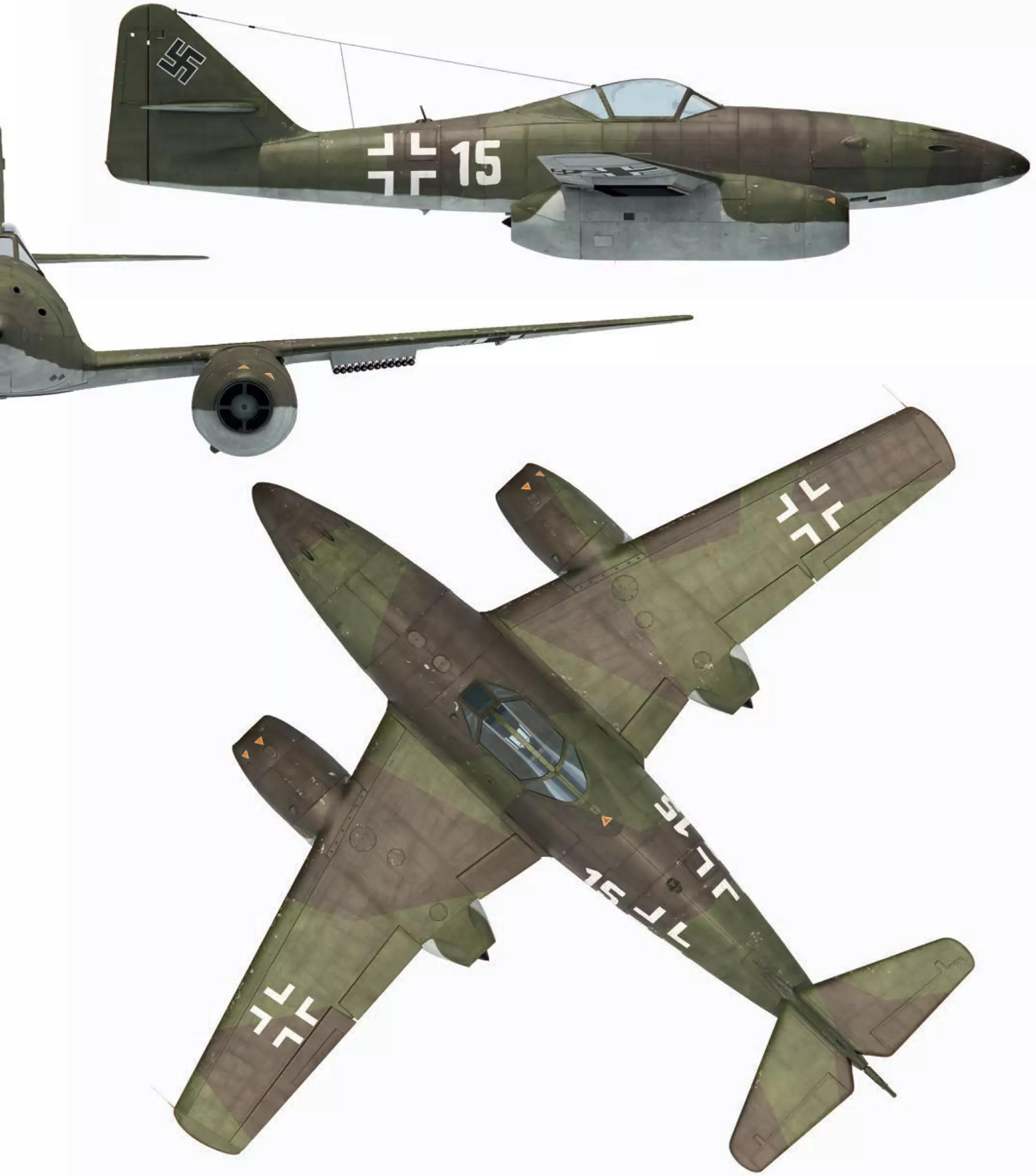

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Messerschmitt Me 262-1a SPECIFICATIONS

Type:	Single-seat interceptor fighter/fighter-bomber
Power:	Two 1,984lb (900kg) thrust Junkers Jumo 004 B-1 turbojet engines
Wing Span:	40ft 11in (12.48m)
Length:	34ft 9.5in (10.60m)
Height:	12ft 7in (3.84m)
Wing Area:	234sq ft (21.7sqm)
Empty Weight:	8,378lb (3,800kg)
Maximum T/O Weight:	14,110lb (6,400kg)
Maximum Level Speed:	541mph (870kph)
Initial Climb:	3,937ft (1,200m) per minute
Service Ceiling:	37,565ft (11,450m)
Range:	652mi (1,050km)
Armament:	4 x 30mm MK 108 cannon / 24 x R4M rockets or 2 x 250kg bombs or 2 x 500kg bombs

Messerschmitt Me 262

The Messerschmitt Me 262 was the world's first operational jet-powered fighter. Although conceived before the Second World War, engine issues delayed its Luftwaffe deployment until mid-1944. The Me 262 featured advanced wartime technology and fulfilled two main roles: The A-1a as a defensive interceptor and the A-2a as a fighter-bomber.

While the Me 262 was less manoeuvrable than Allied piston-engine fighters, its superior speed allowed pilots to evade interception and attack bomber formations with minimal risk. However, Allied pilots soon adapted, targeting the Me 262s during takeoff and landing when their engines were slow to accelerate. Luftwaffe jet bases were frequently bombed, and Allied fighters routinely patrolled these airfields to intercept returning Me 262s.

While some attribute the Me 262's limited success to fuel shortages, kerosene availability was not the primary issue. The main challenge was the engine's reliability. Manufacturing jet engine components required metals like nickel and cobalt, which were scarce in Germany. As a result, inferior substitutes were used, reducing the average engine lifespan to only 25 hours. ■

Welcome

Welcome to the second issue of Aviation Classics Monthly.

This month we're focusing on the aircraft and pilots of the Luftwaffe during the dark days of the Second World War.

Our spectacular cover image, by the immensely talented Piotr Forkasiewicz, depicts Messerschmitt Me 262 A-1a 'White 15' piloted by Unteroffizier Johann-Karl Müller of last-gasp interceptor unit JV 44 on April 20, 1945.

Müller's aircraft was equipped with racks of R4M air-to-air rockets when the unit, led by famous ace Adolf Galland, joined the attack on Martin B-26 Marauders of the USAAF's 323rd BG over southern Germany.

The full story of this unique unit starts on p16. The horror of Canadian bomber crews being set-upon by bat-like rocket-propelled Me 163 Komets can hardly be imagined – see page 36 – and the pilots who set down their DFS 230 gliders right at the foot of Mussolini's mountain prison during a daring mission to free the dictator are featured on p46.

Lastly for the Luftwaffe, we review the genesis and brief existence of the infamous Heinkel He 162 'Volksjäger' on p58.

But all this is only half the story! The remarkable story of how Fairey came to build the Swordfish torpedo bomber begins on p28 and the exploits of the F-16 Fighting Falcon during the earliest years of its long service career can be discovered on p74.

Enjoy the magazine.

Charlie

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The latest historic aviation news from the UK and around the world.

16 ADOLF GALLAND'S GALLANT FINALE

Having been relieved of his position early in 1945, Galland was later allowed to establish his own jet fighter squadron, Jagdverband 44. It was with this unit that he would undertake his final mission.

28 TORPEDO BOMBER FOR THE FLEET AIR ARM

With the torpedo being the main weapon of choice for the Fleet Air Arm, its two main aircraft suppliers; Blackburn Aircraft Company and Fairey Aviation battled it out to produce a torpedo bomber and Fairey came up with the Swordfish.

36 MESSERSCHMITT Me 163 KOMET

The last rocket fighter victory of the Second World War when the Canadian Air Force came up against the Me 163.

43 ADOLF GALLAND

Galland, a German Luftwaffe general, completed 705 combat missions, survived being shot down four times and was credited with 104 aerial victories.

44 CENTRESPREAD

A tribute to Adolf Galland courtesy of Ivan Berryman. Titled 'On a sortie from Caffiers, France in 1942'.

46 THE RESCUE OF MUSSOLINI

Any history of the DFS 230 has to mention the well-known 'Unternehmen Eiche' (Operation Oak), when Mussolini was rescued.

58 HEINKEL He 162

Heinkel's He 162 was the last German fighter to enter service during the Second World

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War. But did it achieve anything at all?

72 SUBSCRIBE AND NEVER MISS AN ISSUE!

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74 THE F-16 IN THE COLD WAR

Emerging from fierce debates on the future of jet fighters, the F-16 started out as a cold warrior during its early career.

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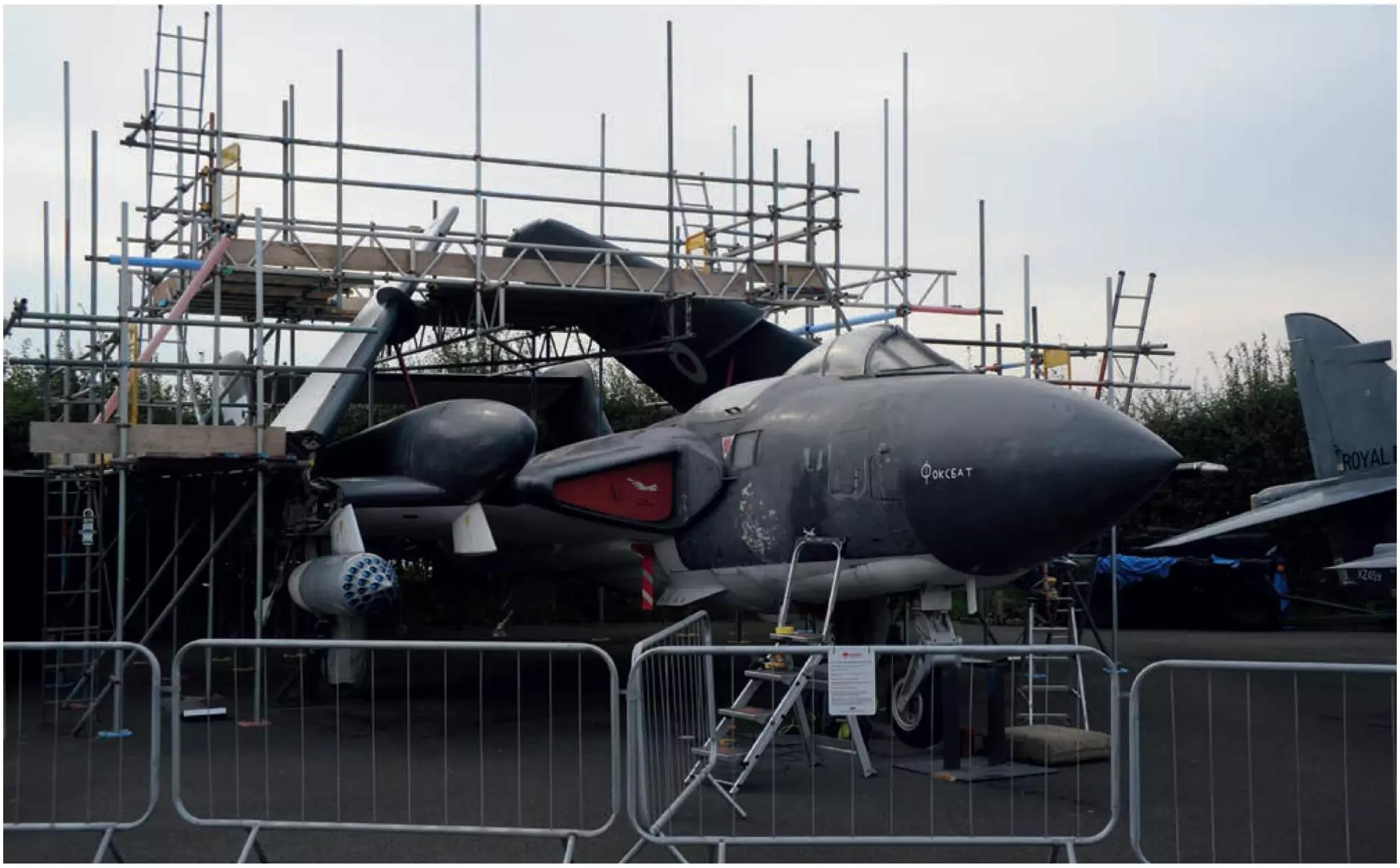
Extensive refresh for Sea Vixen after 25 years in all weathers



Though the elegant lines of the de Havilland Sea Vixen are not visible, this scaffolding is helping preserve this classic British naval fighter for future generations. Volunteers start early at the museum, and this early morning shot was taken just before they began work on all areas of the fuselage and wings. *Glenn Sands*

Tangmere Military Aviation Museum volunteers continue to make progress on the refurbishment of the de Havilland Sea Vixen FAW Mk2 XJ580, which is part of the aircraft collection displayed outside the main building on the site of the former RAF Tangmere, near Chichester in West Sussex.

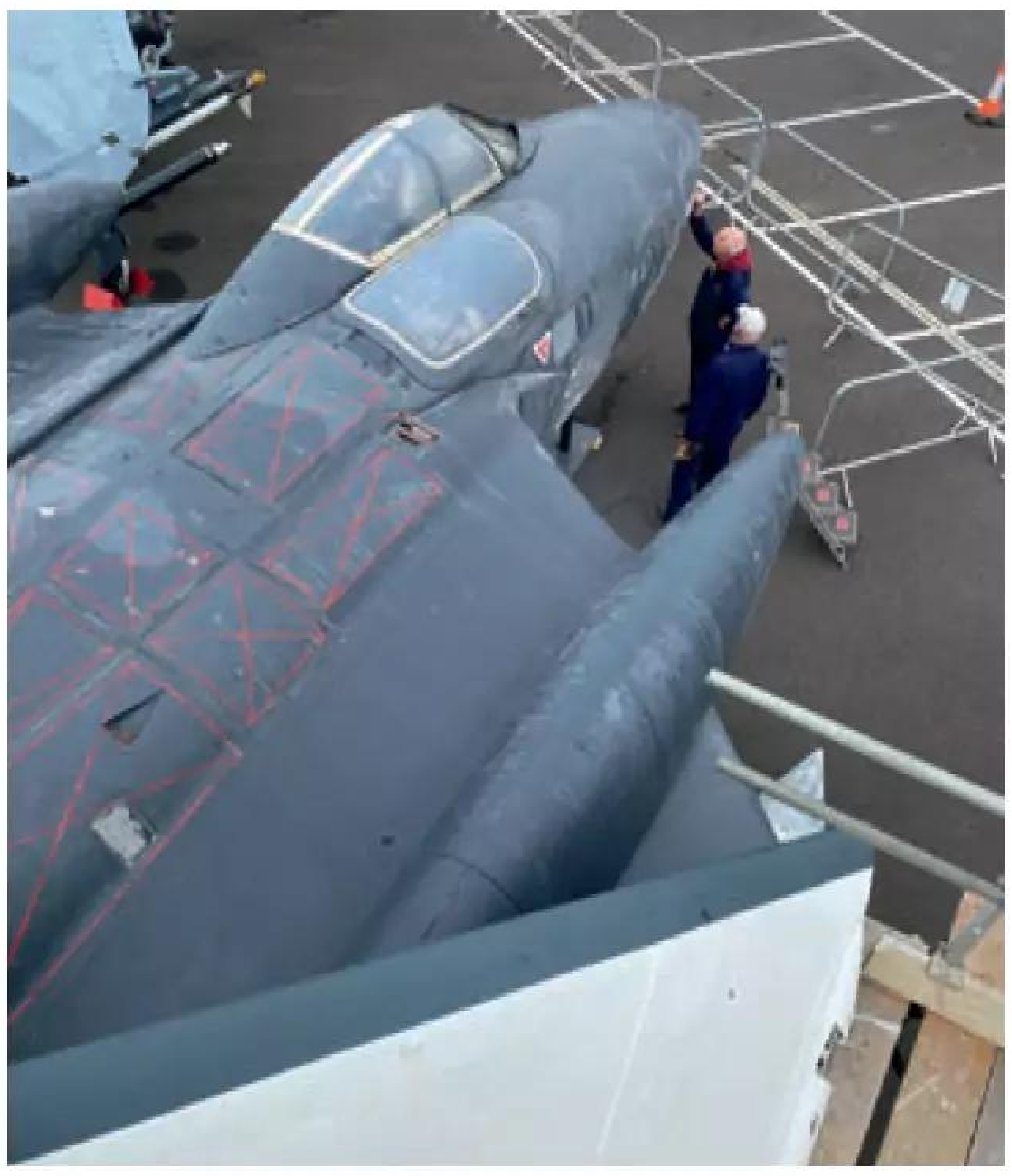
Volunteer engineer John Nicholas, who is overseeing the work on XJ580, discussed the recent progress on the Sea Vixen with *Aviation Classics Monthly*.

"We've been working on repainting the Sea Vixen. I am not sure how long ago it was last painted; it wasn't done particularly well, and I am certain it wasn't by us. We've been sanding the folding wings down to a stable paint surface, then applying four layers of primer underseal, followed by four coats of topcoat on the wings. We are now attaching the decals to the outer wing sections.

"We're about to begin work on the lower sections of the aircraft. It does mean that the scaffold that's currently covering the aircraft can be removed within the next week or two, allowing us to move around the rest of the fuselage from the ground," says Nicholas.

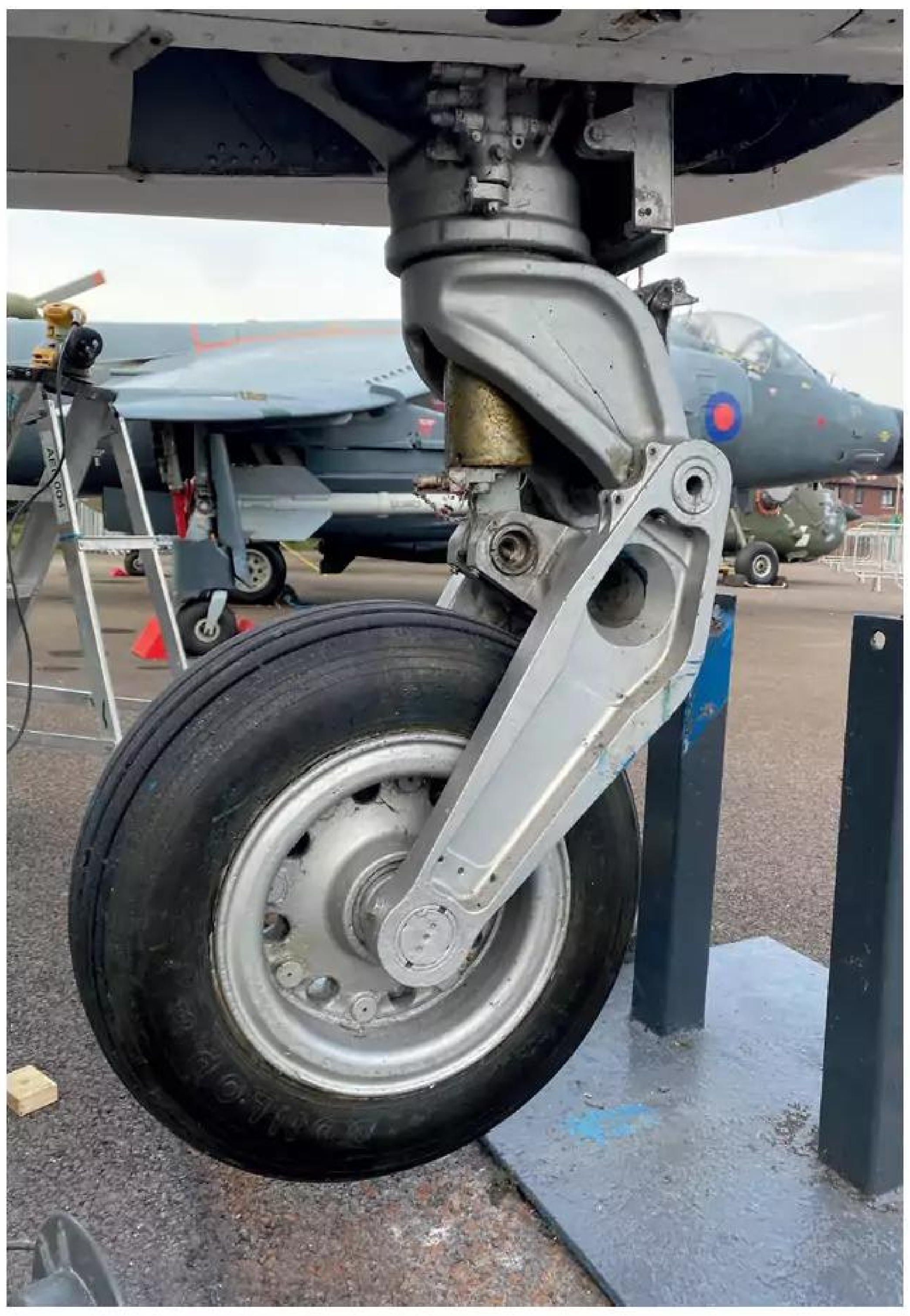
Enquiring on the condition of the Sea Vixen, given its years outside, before arriving at Tangmere in May 2000 for external display. Nicholas adds: "Overall, the aircraft is in quite good condition; there are some localised areas of corrosion, and a few patches of the skin have cracks, but generally it remains in reasonable shape. We have worked extensively on the outer folding wings and the folding mechanism, restoring these areas to their original appearance as it would have had in Fleet Air Arm service."

When asked if there are any challenging aspects of the project, Nicholas is quick to highlight an issue with the nose wheel undercarriage, adding: "The Sea Vixen has a



With a stripped, repainted, and fully restored wing section in the foreground, the surface of the Sea Vixen shows the effects of the UK weather. The upper fuselage will be repaired, sanded, and repainted in due course. *Glenn Sands*

Museum volunteers attach the serial code, XJ580, to the port wing of the Sea Vixen. *Glenn Sands*



The crack in the nose-wheel leg is visible in this view. A repair is scheduled before the end of the year. *Glenn Sands*

complex nose leg arrangement with an upper and lower link, both part of the suspension and involved in steering. When we received the aircraft, it already had a small crack across the cross section in this area. Since being outside, it has developed another larger crack that extends down to the thinner part of the lug near where the swivel nose leg pin is. To be honest, I am unsure if this was a common issue with Sea Vixens during their active service.

"We're currently working on manufacturing a steel strap to go around this area to secure it. However, if anyone knows of a complete Sea Vixen nose leg that is available, please contact the museum; we would be keen to replace this part entirely."

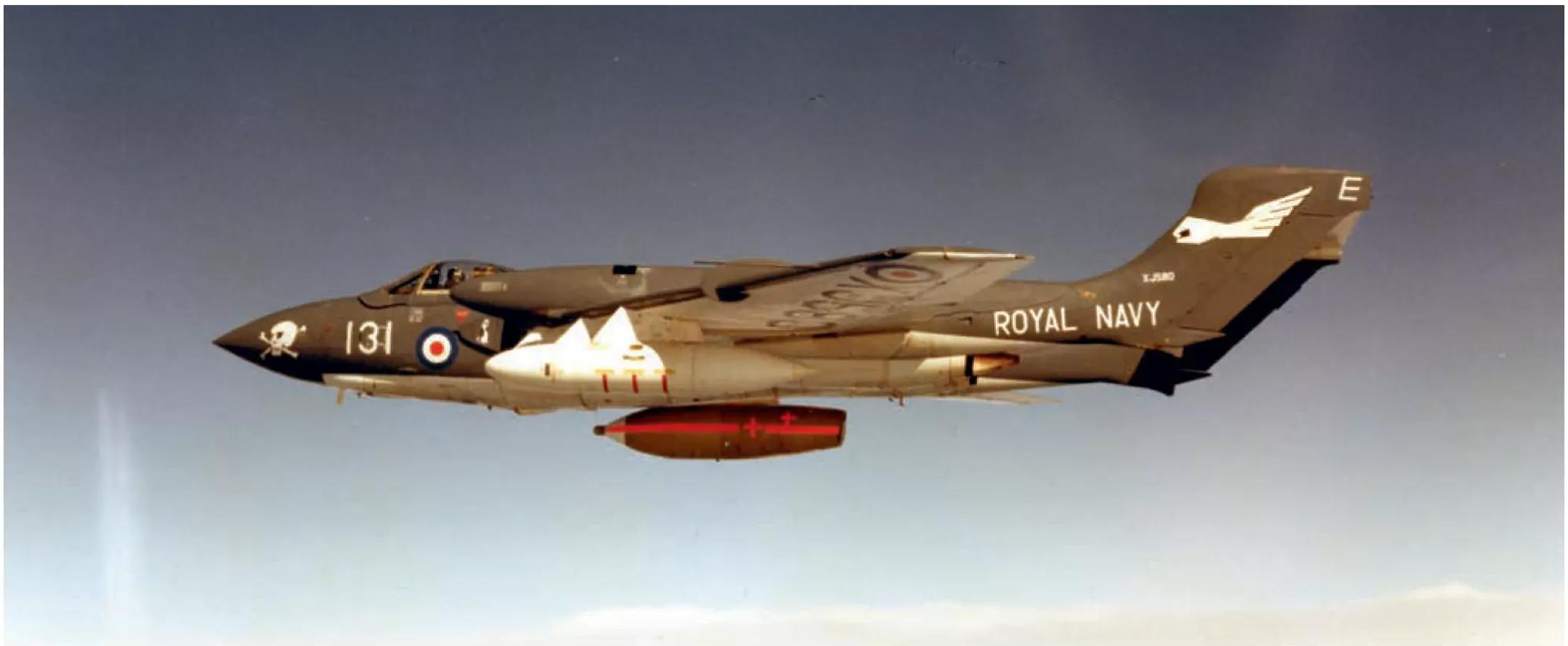
With the scaffolding set to be removed from around the aircraft in the next two to three weeks, it provided excellent access for sanding and attending to the upper external fuselage and wings before repainting.

"You can sand in almost all weather, except for heavy rain, of course, but when it comes to painting, we need dry days that aren't too hot. This hasn't been the case this year, with the temperatures being too high. We've had the wrong kind of summer," adds Nicholas jokingly.

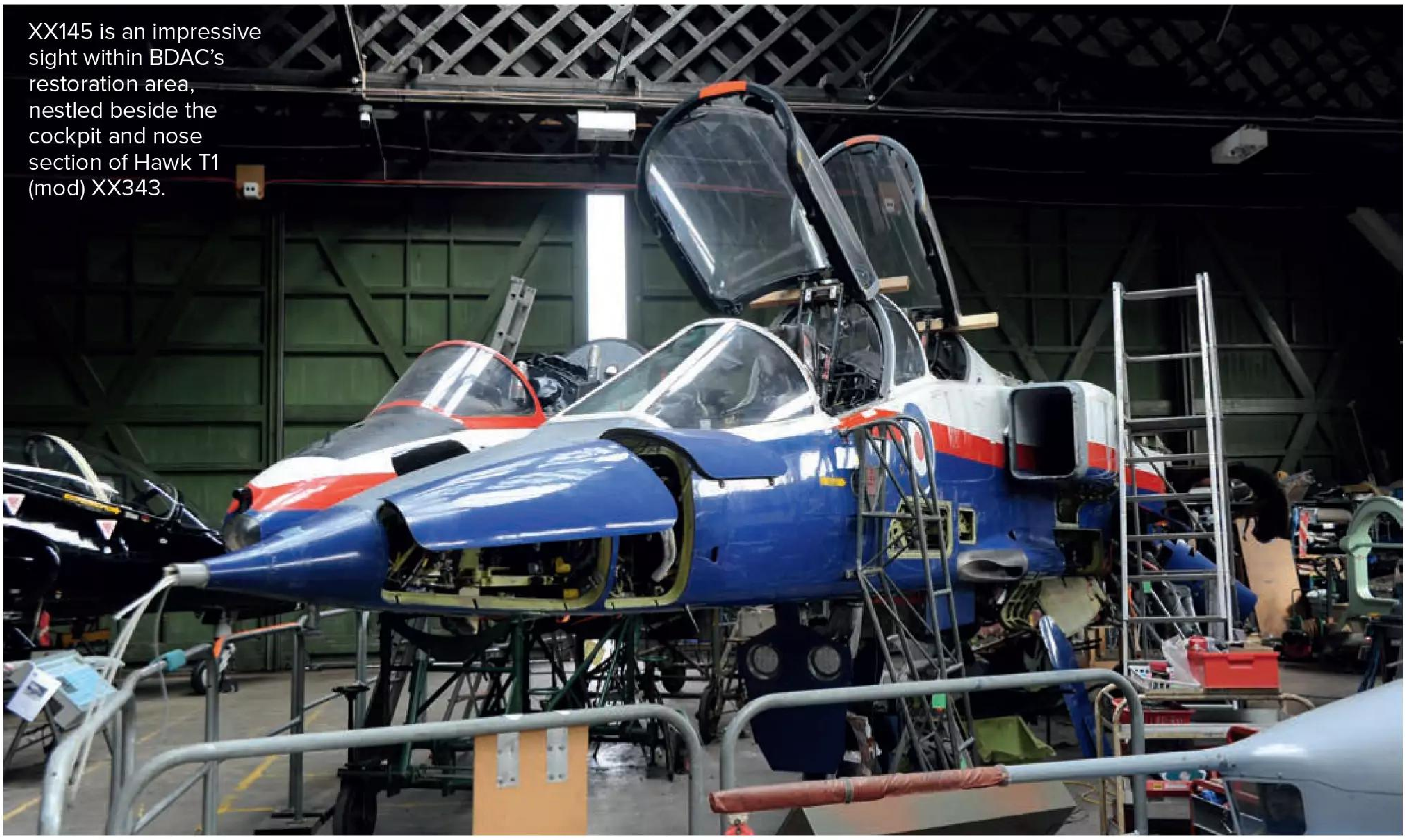
Nonetheless, the painting work on the areas the volunteers were keen to address is almost complete, and markings are being added to the airframe.

"We're going to focus on the visible parts of the aircraft to make it look as good as possible to visitors. However, our main priority is protecting the airframe. There's some localised corrosion, but as with work on the top of the fuselage, we can easily access this with our in-house equipment. Overall, though, it's not in bad nick," adds Nicholas.

If you can help the Sea Vixen volunteers find a nose leg, please contact the museum at: **www.tangmere-museum.org.uk**



Sea Vixen FAW Mk2 XJ580 on a test flight, equipped with a hose-drum unit (HDU) for air-to-air refuelling mounted beneath its fuselage. *Credit: Hugh Trevor Collection*



XX145 is an impressive sight within BDAC's restoration area, nestled beside the cockpit and nose section of Hawk T1 (mod) XX343.

Restorers putting Raspberry Ripple big cat back together

Volunteers at the Boscombe Down Aviation Collection (BDAC) Museum, based at Old Sarum Airfield in Salisbury, Wiltshire, recently shared an update with *Aviation Classics Monthly* about their restoration team's current efforts, focusing on the collection's remarkable Jaguar T2A XX145. The aircraft is well placed within the museum's exhibits, which showcase airframes that have flown and supported various test roles with different MOD and RAF experimental units, including the A&AEE, RAE, and the ETPS.

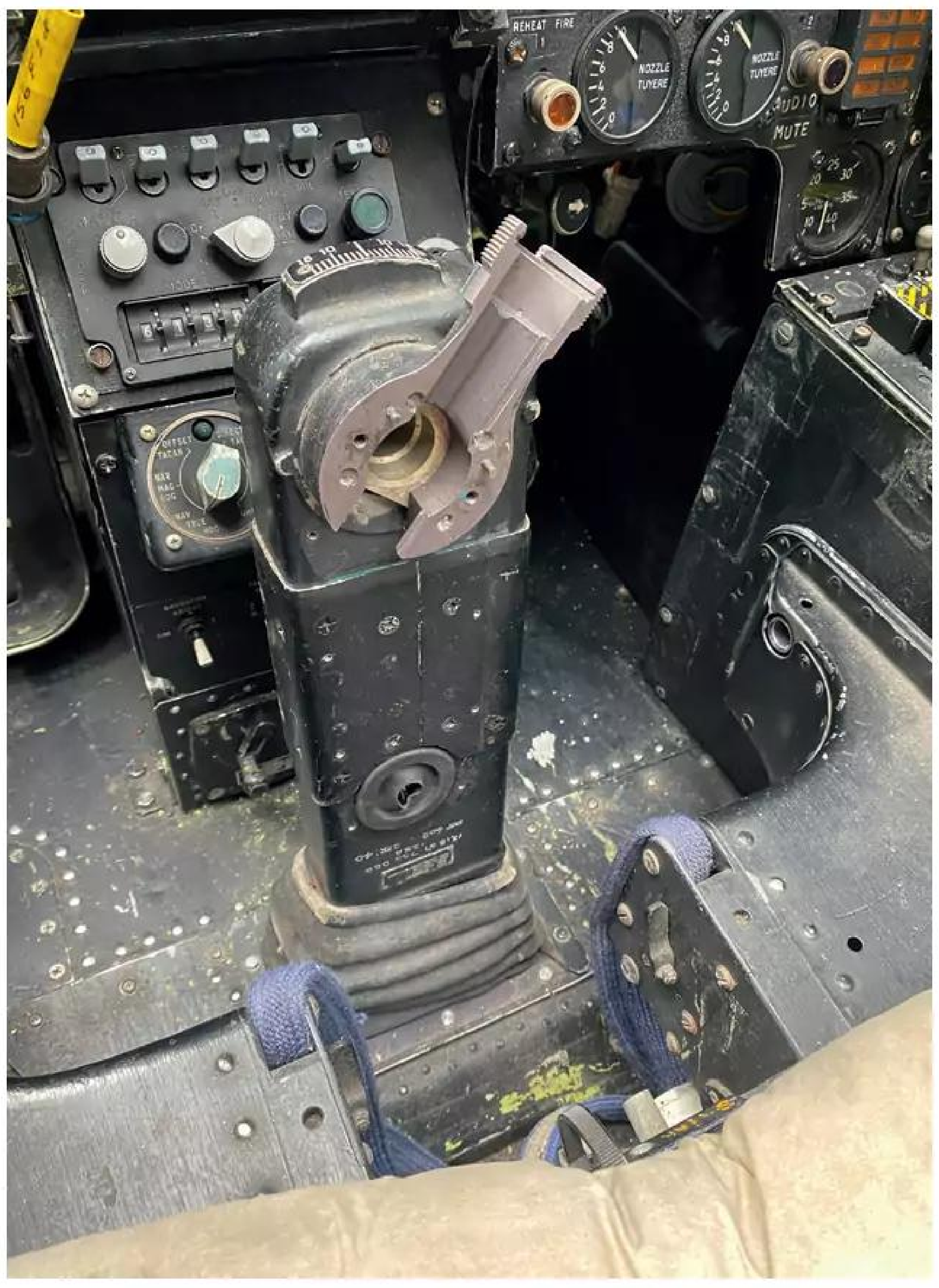
BDAC holds a rather unique position regarding Jaguar exhibits, possibly being the only site to display four Jaguar models, although two are simply fully restored cockpit sections. This makes BDAC the only museum where visitors can closely follow the development of the Jaguar, thanks to the variety of variants on display.

Overseeing the restoration of XX145 is volunteer Ron Fulton, Technical Director at BDAC, a highly experienced aviation avionics designer and engineer who previously worked with DERA, the ETPS, and later QinetiQ at Boscombe Down until his retirement in 2002. He provided a brief background to XX145: "This aircraft was built in 1976 and spent most of its service with the Empire Test Pilots School at Boscombe Down, which was broken up with some trials work it undertook in between. In around 2000, it ceased flying and then became a spares source for the other Jaguar T2 then with the ETPS. So, in my view, that was the start of its demise in some ways.

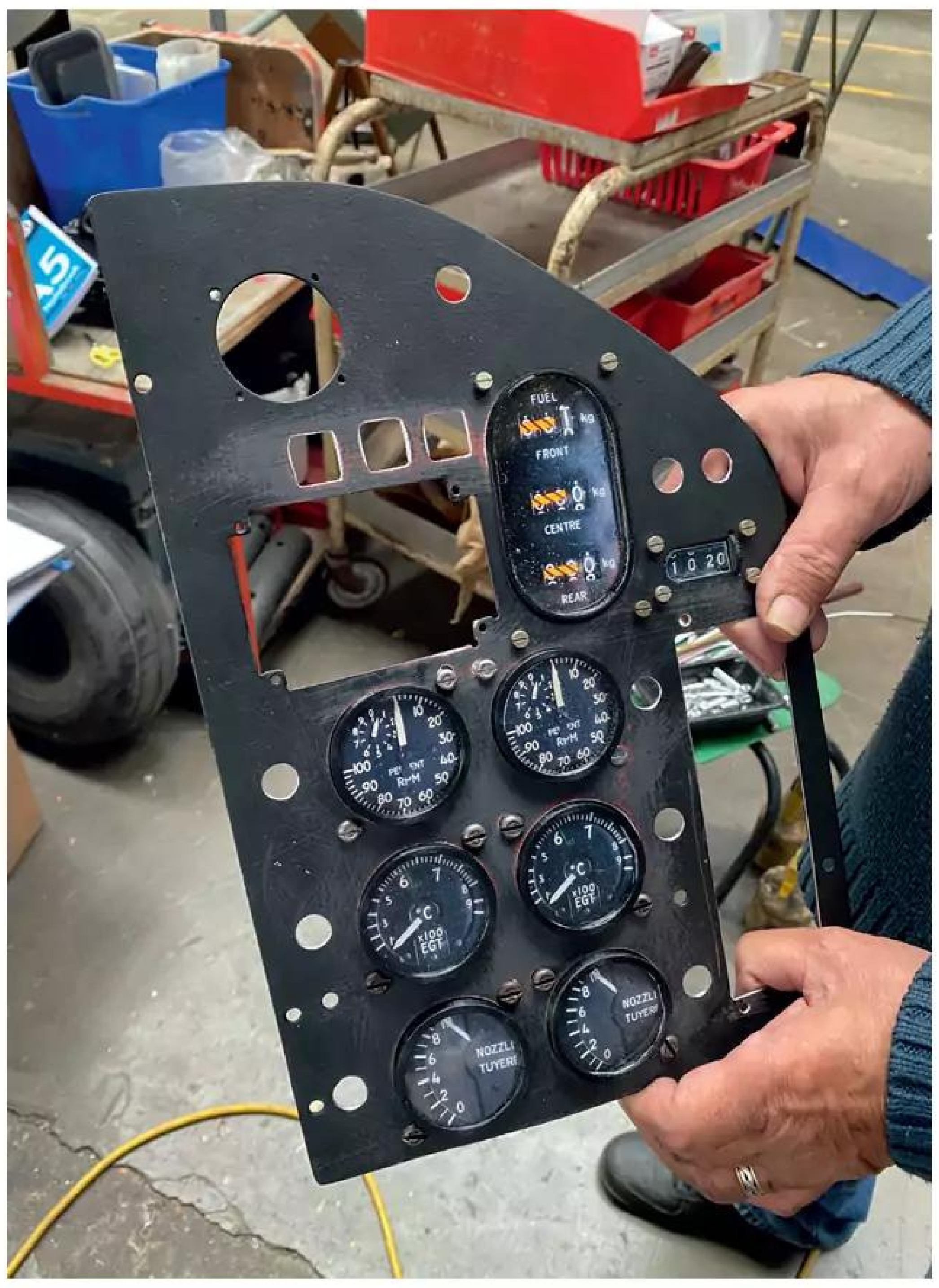
"The aircraft was later sold to RAF Cranfield and subsequently moved to Bruntingthorpe, where it was scheduled for restoration by the new owners; some minor work was undertaken on the airframe. However, during the various relocations, all the wiring had been cut, the rear cockpit stripped out, and many components went missing." Fulton continues: "It transpired that RAF Heritage took an interest in XX145 and questioned how it ended up on the civil market. They quickly removed the T2 from Bruntingthorpe, impounded it, and returned it to RAF Cosford. RAF Heritage believed that XX145 should never have been sold."

The amount of wiring within XX145 is often unique to the aircraft and has involved many hours of splicing and investigating the purposes of each connection.

Having returned to RAF Cosford, XX145 was quickly reassembled and was displayed on static display annually for the airshow. Ron continues: "It was RAF Heritage that approached us nearly three years ago and asked if we were interested, as XX145 had an appropriate connection to Boscombe Down. They were well aware



Jaguar control column tops for both the front and rear cockpits are high on BDAC's list of 'wants'.



The museum relies on 3D printing technology to replicate some of the instrumentation and panels in the cockpits, where specific items cannot be found. The result is highly effective.

of our policy, and we said absolutely. It was gifted to us on the condition that we went, removed it, and transported it ourselves. I agreed to this offer.

"It took only two days to disassemble the aircraft, and the transport arrived on the third day to bring it back to the museum. One of the conditions of the aircraft being a gift from RAF Heritage is that it must be displayed inside."

When XX145 returned to BDAC, volunteers were already working on the Tornado GR1 ZA319 within the restoration area, so XX145 waited to be next in line. Around May, XX145 was moved into the restoration area of one of the hangars at Sarum, and a full survey of the aircraft was carried out. Ron adds: "We now know what's missing from the aircraft and have begun searching for those parts. We have also contacted RAF Heritage, provided them with the list, and asked if they can source the parts for us, as they are now disposing of the GR1 airframes at RAF Cosford. They have been very positive about the possibility of sourcing some of these items in due course."

In terms of parts, Ron offered this insight: "Talking about the main issues, one of the engines is missing its oil pump and the high-pressure fuel pump. All the instruments in the rear cockpit are absent. I currently have a list that spans five pages! This also includes the hydraulic accumulators and other components.

"Currently, we are splicing the wiring together, which, as mentioned, was cut when the wings were removed for transportation. Instead of disconnecting all the connectors and spending a day doing it properly, it was simply all sliced through. Now, we are re-splicing it all back together. On a standard Jaguar, each wire is individually identified, but the modifications made to XX145, which was a trials aircraft, have not been documented. The only way is to find one end and the other, then try to locate the section in the middle.

"We won't do it all, but enough to get power on the aircraft and ensure it has basic functionality. However, there are restrictions on what we are allowed to do – no hydraulic or engine power. The plan is to put the XX145 back both externally and internally, so it looks complete and as if it could go flying tomorrow."

The T2 will not be repainted, as BDAC volunteers have already polished the gloss polyurethane finish on the aircraft to a high sheen, and the minor touch-ups will be completed during the final stages of the restoration. When asked about the project's progress towards completion, Ron adds: "I'd say around 18 months. We've got DC power on it now, we've got landing lights, taxi light, and high-intensity strobes. Until we fit the wing, we can't do much about the navigation lights. But we are checking the electrical circuits, and it'll be ready."

BDAC's approach to those who volunteer on the Jaguar is perhaps unique, as Ron explains: "For those working on XX145, I prefer to assign each person a task. If it takes longer because they can only come in one day a week for six weeks, so be it. It's their responsibility, and they can feel satisfied at the end, knowing they've achieved something and have something to show for it. I think many museums don't adopt this approach, and sometimes it doesn't bring the same satisfaction in the end," he continues.

"There are about four people currently working on the Jaguar, one is an ex-RAF fitter, one comes from an avionics background in the Army Air Corps, and there's another with no aviation background who is here to learn."

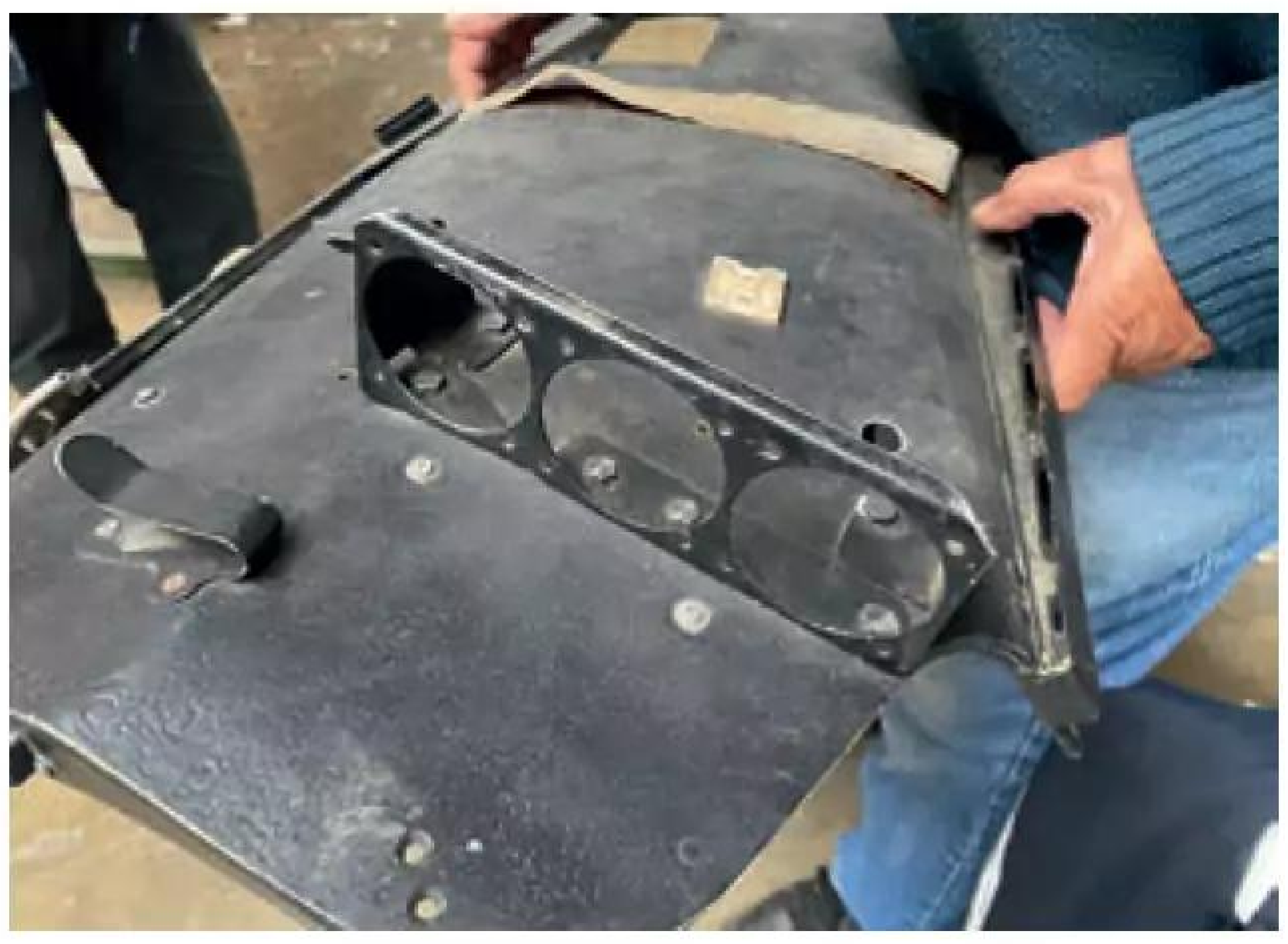
Asked what the most challenging aspect of the process has been so far, there is an intake of breath as Ron returns to the complexity of the wiring, but he adds:

"Compared to the Tornado, there's surprisingly little Jaguar items available on the internet. I don't know why, it just doesn't turn up. But I am keeping a good eye out, but we're a non-profit organisation so we don't have a bottomless money pit in which to dive into."

Inquiring about what BDAC is seeking for XX145, the search is ongoing for a pair of joystick tops, which are simply too expensive to acquire online at the prices they demand. However, the search for parts will continue, with RAF Heritage also involved in the project.

Once complete, the Raspberry Ripple scheme of XX145 will be one of the star exhibits within the BDAC.

(If you do have any Jaguar parts which BDAC may need for XX145 contact the museum on: Tel: 01722 323636 or visit the website: www.boscomedownaviationcollection.co.uk)



An indication of XX145's test career is this unique instrument mounting on the upper forward coaming, which provided pilots with a quick reference point of the aircraft's performance during high-energy manoeuvres.

All images Glenn Sands

Squadron Leader Paul 'Major' Day, a legend within the BBMF, passes away

Squadron Leader Paul Day OBE AFC was a true legend among aircraft enthusiasts during his time with the Battle of Britain Memorial Flight (BBMF). Having joined the RAF in 1961, he earned the nickname 'Major' after an exchange tour with the USAF flying F-4 Phantoms. His rank of Squadron Leader did not match the USAF ranking system, so he adopted the closest equivalent and became 'Major' Paul Day during the exchange tour.

The 'Major' went on to fly with the BBMF during his time at RAF Coningsby as a Tornado F3 pilot with 229 Operational Conversion Unit and remained with the Flight for an unprecedented 24 years, achieving over 1,000 hours on Spitfires. He held the longest tenure as Officer Commanding BBMF, from 1996 to 2003, before retiring in 2004 after 43 years of service.

During his time with the BBMF, he appeared on numerous television documentaries, and few people cannot recall his appearance on the documentary series Equinox on the Spitfire, where he compared the cockpits of a then-being part-restored Bf 109, which later became 'Black 6', and a Spitfire. Despite some issues, it was clear he preferred the Spitfire to go to war in.

Aviation writer Glenn Sands said: "I remember attending one of the RAF's Battle of Britain at Home Days held regularly in September during the late 1980s, and as an enthusiastic aircraft enthusiast, being invited by Squadron Leader Day 'under the rope', where he took five minutes to point out and explain specific areas of the Spitfire cockpit in close detail. It's a memory that has stayed with me ever since. Thank you, Squadron Leader."

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Squadron Leader Paul 'Major' Day flew F-4 Phantoms and Tornado F3 aircraft with the RAF, and later commanded the BBMF. *Credit: BBMF*

NEWS IN BRIEF

Whirlwind restoration is well on the way

The Westland Whirlwind Fighter Project is making excellent progress, with the latest component completed—the lower tail fin – delivered to the Kent Battle of Britain Museum, where the restoration is ongoing, on 21 September. Chief Engineer Pete Smith, who works on the project, built the section, which includes a complete tail wheel compartment. A team of project volunteers and museum staff attached the new tail unit to the main fuselage the following day. An additional three feet will still need to be added to the upper tail section once the horizontal stabiliser and elevators are in place.

The attention to detail in the project includes installing control cables that connect to the cockpit, enabling all control surfaces to be operated once the aircraft is finished.

The finished Whirlwind, which will be painted to represent P7056 "The Pride of Yeovil", will eventually be displayed alongside the recovered remains of Whirlwind P6966 at the museum.

D-Day veteran Dakota heading to the US

Long-standing UK resident Douglas C-47, 42-100884/N147DC, is being prepared for a new chapter in the US. New owner Jeff Lewis has announced on social media that it will undergo extensive maintenance before travelling to the USA in 2026.

Built in 1943, the C-47 boasts a distinguished military history. It served with the USAAF 79th Troop Carrier Squadron (TCS) from RAF Membury, Berkshire. It took part in D-Day before entering RAF service as TS423, where it was involved in glider recovery missions. The aircraft concluded the war with the RCAF 463 Sqn before being returned to RAF ownership to participate in the Berlin Airlift.

42-100884 was later used as a development and trials aircraft with Short Brothers, Scottish Aviation, Marshalls, and Ferranti. During this period, the Dakota was fitted with a longer nose to house radar equipment and avionics, which were still under development at the time. Ultimately, it was retired by the Royal Aircraft Establishment in 1969 and placed into storage.

Acquired by Mike Woodley of Aces High in 1979, the C-47 was registered in the UK as G-DAKS and flown to Duxford for restoration, which involved removing the extended nose. It later spent time for film and TV work, as well as airshow appearances with Aces High. In the early 80s, G-DAKS appeared in the TV series Airline, where it was depicted as a civilian DC-3 belonging to "Rushkin Air Services." Over the years, its markings were regularly changed with various RAF, SEAC, and USAAF schemes applied. In 2002, it was registered in the American "N reg" as N147DC but remained in the UK and was moved to Dunsfold.

In 2019, the C-47 was repainted with the markings it wore on D-Day when serving with the USAAF. This was done in time for the 75th anniversary of D-Day, and it led a formation of 21 C-47s/DC-3s /Li-2 from the IWM Duxford to France for commemorative ceremonies.

After Dunsfold closed, G-DAKS flew to North Weald in October 2019 and has been stored there ever since.

The BBMF Lancaster will sit out the 2026 airshow season while it undergoes maintenance at the IWM Duxford. Its spot will be taken by the Flight's C-47 Dakota. *Credit: MOD Crown Copyright*

'Unsung' Dakota stepping up as BBMF's Lancaster is grounded

The Battle of Britain Memorial Flight (BBMF) has announced that the Avro Lancaster B1 PA474 will miss the 2026 airshow season as it is scheduled to undergo extensive maintenance for several months. During this period, it will be replaced in some display slots by the Flight's C-47 Dakota, which will join the usual Spitfires and Hurricanes in the display routines.

An RAF spokesperson stated that: "The routine work will follow the conclusion of the 2025 display season", with the Lancaster's final airshow appearance at the Imperial War Museum (IWM) Duxford season finale on October 4.

BBMF Lancaster pilot, Squadron Leader Paul 'Ernie' Wise, explained to the media that the scheduled maintenance work is about preserving "our nation's heritage". He added: "We do want to keep them flying indefinitely. In order to do so, they have to be taken offline from time to time to go through an in-depth maintenance procedure for a major servicing.

"It tends to be every eight or so years, and it will be stripped down, so there's nothing new, but fingers crossed at a speedy return."

Discussing its 'replacement', the C-47 Dakota of the BBMF, Sqn Ldr Wise added, "It's really our unsung hero. Primarily, our training aircraft is essential, so without it, we can't progress the crews any further.

"So, our three-ship formation, for example, can still go ahead."

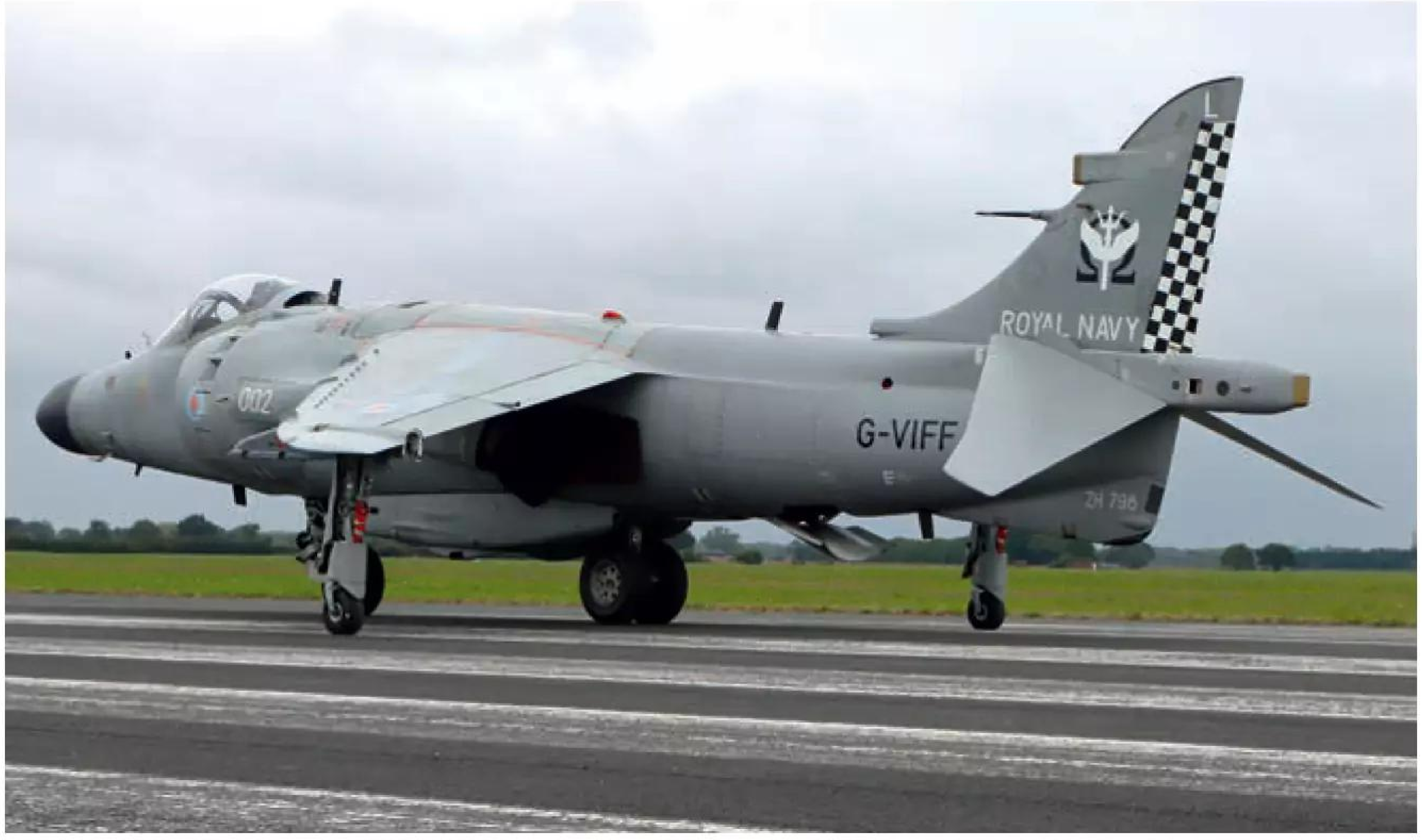
The major servicing work will, as in the past, be carried out by the vintage aircraft specialist the Aircraft Restoration Company (ARCo) based at IWM Duxford and is scheduled to take around 18 months, provided no major issues arise during this work.

ARCo carried out the last major servicing on PA474 in 2017, during which the company's team of nine full-time specialist technicians carried out several sheet metal repairs to the airframe's skin. Many of the engineers present at that time are still with the company, meaning that the knowledge and experience related to either the engineering history or PA474 remain within ARCo.

During this engineering and restoration work, the Lancaster will be located within the Stephenson Hangar at Duxford. Although closed to the public, the ARCo will, as in the past, provide social media updates on Instagram and Facebook to keep enthusiasts informed about the ongoing work.

The BBMF Lancaster PA474 is due to arrive at Duxford in early October, after which it will be moved into the hangar to begin work.

Superb low-hours Sea Harrier receives ‘G-VIFF’ civilian serial



Looking every inch as though it’s ready to take to the air, Sea Harrier FA2 ZH798 is now on the UK register.

Jet Art Aviation (JAA) has announced that its British Aerospace Sea Harrier FA2, ZH798 has been added to the UK Register with the appropriate serial G-VIFF, on July 9.

The Sea Harrier remains in full ground-running condition, as it is the only example of the type to do so outside the USA. The FA2 is based at Leeds East Airport, Church Fenton, in North Yorkshire.

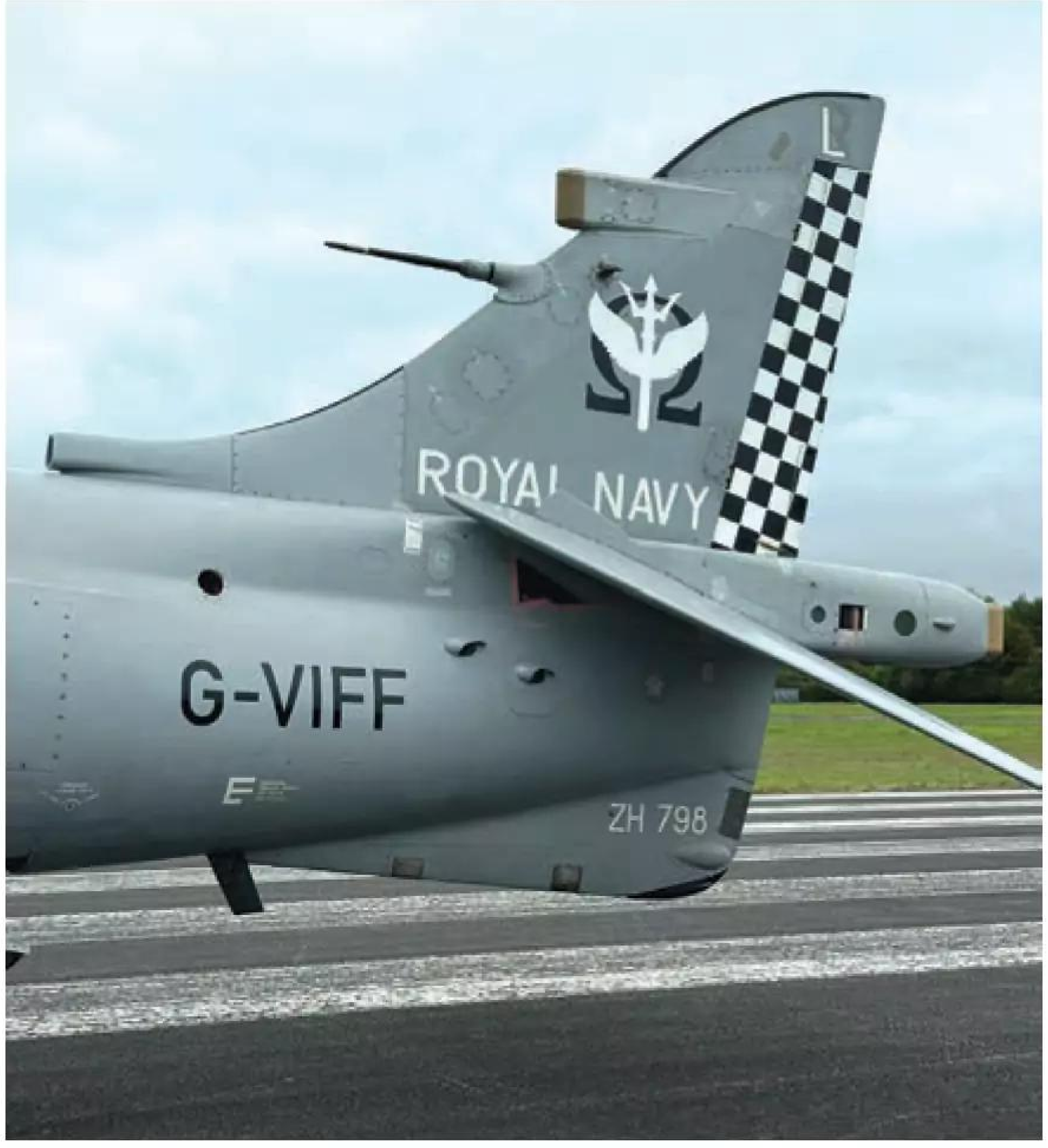
The project has been ongoing for JAA since January 2021, when the company removed three Sea Harrier FA2s from Royal Naval Air Station (RNAS) Culdrose and transported them to their restoration facility in Thorpe Wood.

The aircraft had previously been used as training airframes by the Royal Navy School of Flight Deck Operations. This involved the FA2s being towed and moved around on a ‘dummy carrier deck’ painted on the ground to train deck handling students in manoeuvring aircraft on the deck of an aircraft carrier, providing them with as realistic an operational experience as possible during training.

Having outlived their usefulness by the end of 2020, the airframes were disposed of by the MOD, which saw JAA acquire the aircraft after a competitive tender process. Of the three aircraft acquired, ZH798 was considered to be in excellent condition, being the third example of the new build Sea Harrier FA2s constructed, and it was issued to the Fleet Air Arm (FAA) on 13 March 1996. It initially operated with No 801 Naval Air Squadron based at RNAS Yeovilton and was coded ‘002’. It made its final flight with the FAA in 2005, having completed less than ten years in operational service and just 1,588 flight hours. With such limited operational service, aircraft fatigue was deemed extremely low; when acquired by JAA, the Rolls-Royce Pegasus 106 engine was found to be in excellent condition, with a significant number of hours remaining.

In early 2021, ZH798 was transported to Leeds East Airport, allowing engineers from JAA, the space and equipment to begin re-assembly and restore the Sea Harrier to its operational markings, which it carried towards the end of its service with 801 NAS.

Since being reassembled, the FA2 has completed several engine and taxi runs. It’s a fitting tribute to JAA’s team of engineers that has brought to life this iconic ‘all British-built fighter,’ which is now fully registered too.

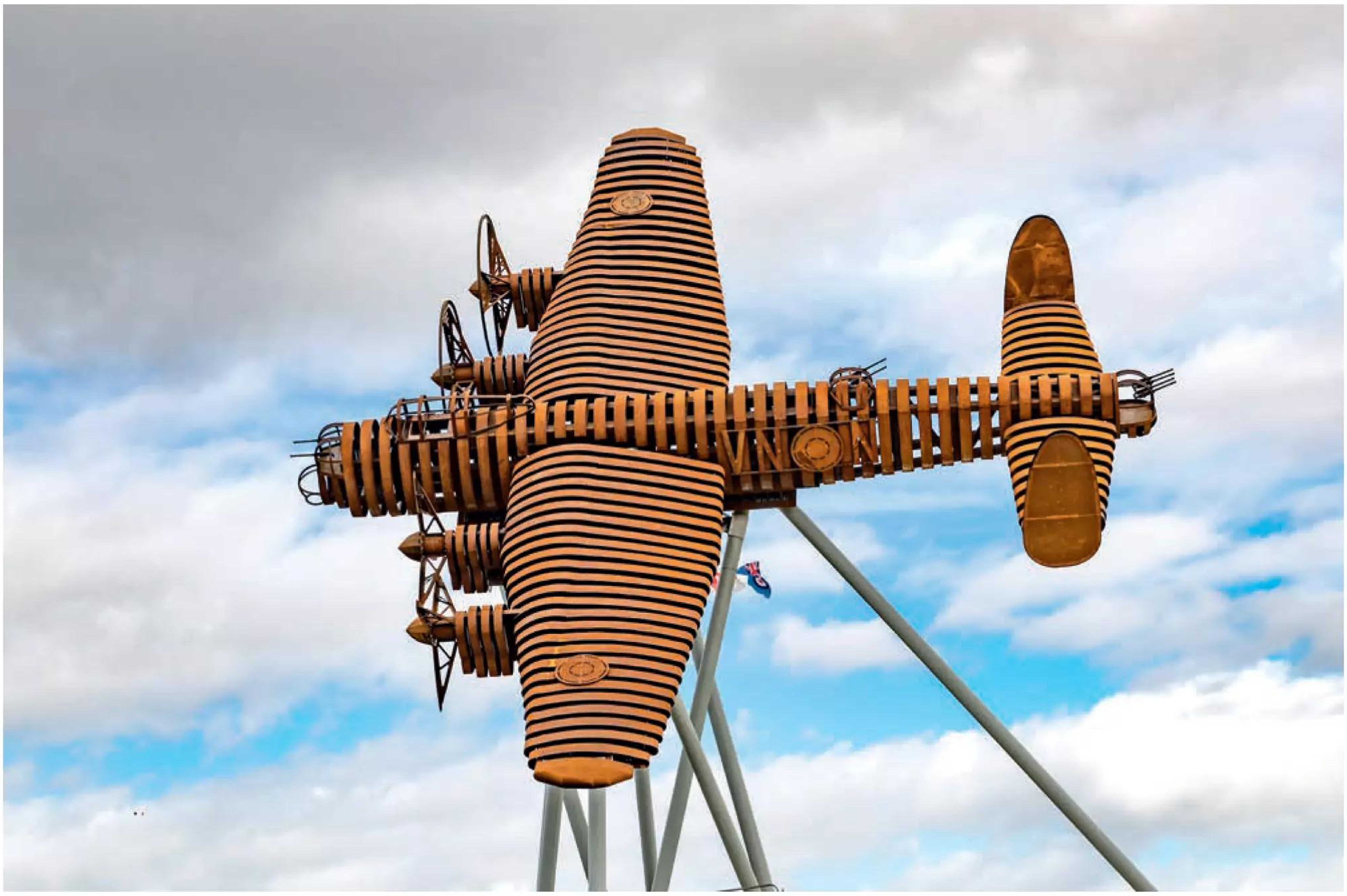


During the reassembly process in 2021, JAA engineers carefully restored the markings that ZH798 wore in the final days of its operational service with the Fleet Air Arm.

The distinctive bulbous nose of the FA2 housed the Blue Vixen radar, which, when combined with the AIM-120 AMRAAMs that the aircraft carried, made the type a highly effective dogfighter.

All images via JAA

Tribute to Lancaster crews unveiled in 'Bomber County'



Taken on October 5', especially for *Aviation Classics Monthly*, this image shows that work on the stunning On Freedom's Wings tribute is almost complete. *Credit: Claire Hartley Photography*

The Bomber County Gateway Trust has unveiled its tribute to World War II aircrews in the form of a sculpture named On Freedom's Wings, which is a full-size steel reproduction of an Avro Lancaster Mk.1. It is displayed next to the A46 in Norton Disney, Lincolnshire, often referred to as 'Bomber County'.

The Lancaster sculpture was placed on the display stand on September 7, after which around 40 volunteers ensured it was securely fastened and safe for the cranes to be removed.

The Lancaster is displayed tilted, as if in flight, and from the nearby road, which sees around 36,000 motorists pass by daily, travelling from Lincoln to Newark, it will be an impressive sight once the memorial is fully completed.

The initial plans for the monument were announced in 2018, which was the RAF's centenary year.

Currently, the site is closed to visitors as work is being carried out to landscape the grounds around the sculpture, after which it will be fully open to the public.

A statement from Charlie White, chairman of Bomber County Gateway Trust, on behalf of all the trustees involved, as the project approaches its final stage, stated:

"After a very busy and very exciting few days on site, and on behalf of the entire team of Trustees, I would like to thank everyone for their overwhelming support and enthusiasm for the Bomber County Gateway installation. We are incredibly proud that so many people's time, effort and determination have culminated in this most recent and significant achievement, welcoming the plane on site at Norton Disney.

"We would also like to take this opportunity to update everyone on the current status of the project. The location remains a construction site. More work is needed to make it safe and accessible to the public. We are not yet open to visitors until this is complete. Please do not visit until we officially open. Doing so will jeopardise our progress towards completion."

Adolf Galland's gallant finale

General der Jagdflieger Adolf Galland was one of the most influential figures in the Luftwaffe from 1942 to 1944. However, he was relieved of his position early in 1945. Shortly afterward, he was permitted to establish his own jet fighter squadron, Jagdverband 44. It was with this unit that he would undertake his final mission.

As part of the Battle of the Bulge – the last major German offensive during WWII – the failure of Operation Baseplate had put the leadership of the Jagdwaffe, the fighter wing of the Luftwaffe, in a difficult position in January 1945. Reichsmarschall Hermann Göring himself had become dissatisfied with what he saw as the failures of General der Jagdflieger 'General of Fighters' Adolf Galland.

The fact that Galland's rebuilt fighter force had been whittled away by Operation Watch on the Rhine was of little concern to him. Galland himself had been ground down by the constant struggle to keep his forces going in the face of overwhelming enemy opposition and the belligerence of his own High Command.

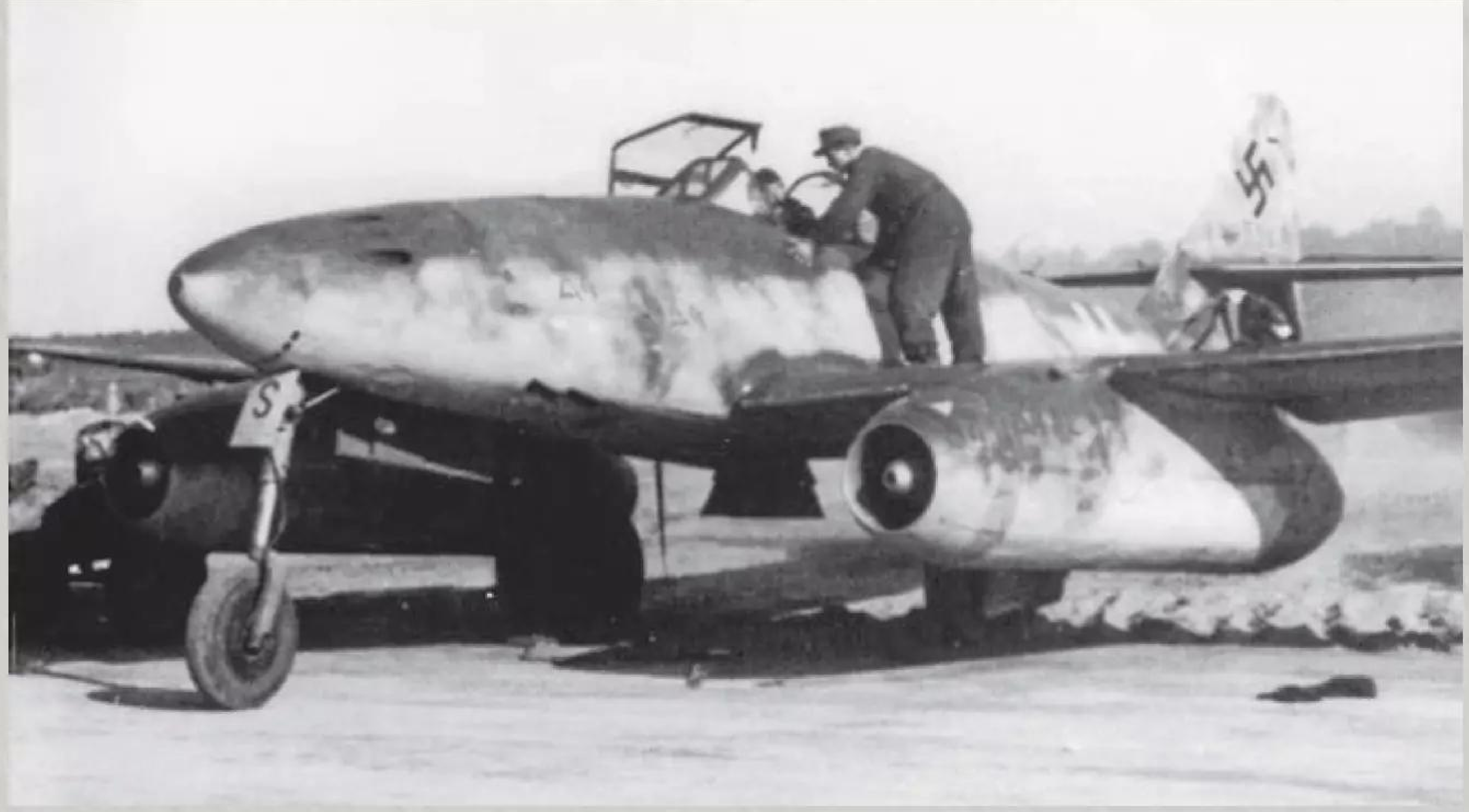
In late December 1944, Galland visited fighter units across the Western Front and was shocked by what he saw as the lack of leadership being displayed by unit commanders, the poor training being given and the general bitterness of personnel towards their leaders.

He compiled a report and sent it to Göring, who then sacked him. His dismissal was officially announced less than four weeks later on January 23, 1945, and his replacement was a former member of his staff, Oberst Gordon Gollob – a man who had apparently sworn revenge on him after a previous disagreement.

Galland requested that he be allowed to return to a front line unit flying the Messerschmitt Me 262, a type he had supported ever since first flying the Me 262 V4 prototype on May 22, 1943. Instead, Gollob set about arranging his transfer to take command of 4./JG 54 in the northern sector of the Eastern Front, flying missions against the Russians over the Courland Pocket.

Defeated and under effective house arrest in Berlin, Galland's car was seized, his telephone was wire tapped and he was

After his sacking as General der Jagdflieger by Reichsmarschall Hermann Göring, Adolf Galland was placed under virtual house arrest, his car was seized and his future looked bleak – until his powerful connections gave him one last chance – the opportunity to lead a unit on the front line flying the new Messerschmitt Me 262 jet fighter.



An early JV 44 Me 262 was 'Red S'. It is pictured in March 1945 at the unit's first base, Brandenburg-Briest.

A JV 44 jet is readied for action at Brandenburg-Briest.

Göring and Galland examine a document together. Galland, 19 years Göring's junior, fell out of favour when it became clear that the Luftwaffe's fighter force – under Galland's direction – was engaged in a losing battle against the numerically far superior Allies.

placed under round-the-clock surveillance. He then received a phone call out of the blue summoning him to the Reich Chancellery for a meeting with Adolf Hitler.

When he arrived he was surprised to be told that Hitler was unavailable but that the Führer had now put a stop to the security forces' investigation into his affairs and would allow him to establish a new unit flying the Me 262. He was told to report to Göring for the details.

The meeting began with the truculent Reichsmarschall reiterating how Galland had failed him but then Göring outlined his plan for Galland. In his autobiography, The First and the Last, Galland wrote: "I was to set up a small unit to demonstrate that the Me 262 was the superior fighter that I had always claimed it was. A small unit only in Staffel strength was to be organised – any more than that would not be possible.

"I would have to find the aircraft myself. He told me that Oberst Johannes Steinhoff, whom he had dismissed, and whom he had considered to be a 'sad case' could be made available to me, and that Obserst Lützow would be available immediately, if I wanted him. I was to submit my proposals.

"The unit was not to be under the command of any division, corps or air fleet – I was to be totally independent. However, there was to be no contact between the new unit and any other fighter or jet unit."

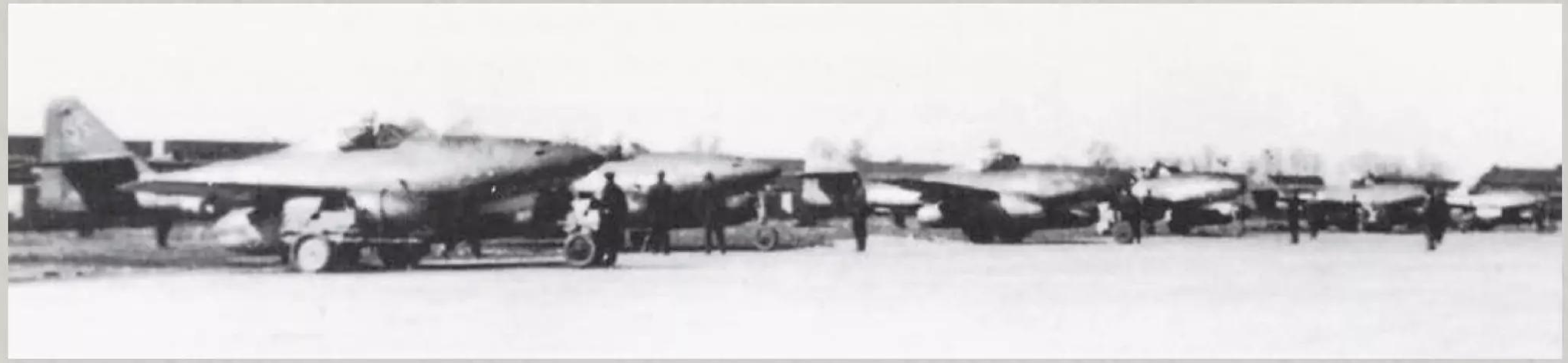
He was able to give the unit any name he chose as long as it did not include the name 'Galland', so he came up with Jagdverband 44 or JV 44. The name, loosely translated, means Fighter Association, with the '44' apparently chosen to commemorate the year of his dismissal as General der Jagdflieger.

Next, he had to decide on a base for JV 44 so he picked Brandenburg-Briest about 30 miles west of Berlin. This was close to a Me 262 aircraft acceptance park, had strong anti-aircraft defence and perhaps most importantly was already home to III./JG 7, which operated the Me 262.

JG 7 was formed by Steinhoff on January 1, 1944 and III./JG 7 had originally been Kommando Nowotny – a unit personally established by Galland under the command of Austrian ace Major Walter Nowotny to evaluate the Me 262.

Once this was approved, he set about gathering the resources and personnel. Allocation of the former – 16 Me 262s, munitions, fuel, spares, tools, flight equipment, trucks, personnel carriers, tractors, trailers, cars and bicycles – was approved by Luftwaffe Chief of General Staff, General der Flieger Karl Koller.

Mechanics and ground crew were allocated from 16./JG 54 and the first pilot Galland called was Steinhoff, who quickly agreed to sign up. After drawing up a list of the other pilots he wanted, some of the



Six Me 262s of JV 44 are lined up ready for takeoff at Munich-Riem. The unit's aircraft are seldom seen together in the same frame, since they were usually dispersed beyond the edges of the airfield to hide them from marauding fighter-bombers and to prevent them from being damaged if the airfield itself was bombed.

Luftwaffe's very finest, Galland attempted to recruit them. Gollob, however, stood in his way though not entirely out of malice.

He recalled later: "At exactly the moment when Galland and everyone else in the Luftwaffe knew that there was a shortage of experienced formation leaders, this gentleman in no way held back from requesting for himself – without exception – our aces. But he only got those I let him have, and a few that he 'organised' for himself by roundabout methods."

Among the new recruits were Steinhoff's former wingman and adjutant Leutnant Gottfried Fährmann, 500-mission veteran Major Karl-Heinz 'Bubi' Schnell, the similarly experienced Major Erich Hohagen, who was recovering from a serious head injury, veteran ground-attack pilot Unteroffizier Johann-Karl 'Jonny' Müller, twin-engined aircraft specialist and flying school instructor Feldwebel Otto Kammerdiener, Oberfeldwebel Leopold Knier, whom it was rumoured had been paid a large sum of money to deliver a Bf 109 intact to the Soviets for inspection, another flying instructor, Oberfeldwebel Josef Dobnig, who had been about to join an 'infantry' unit using Panzerfausts against Soviet tanks, and former night flying instructor Unteroffizier Eduard Schallmoser.

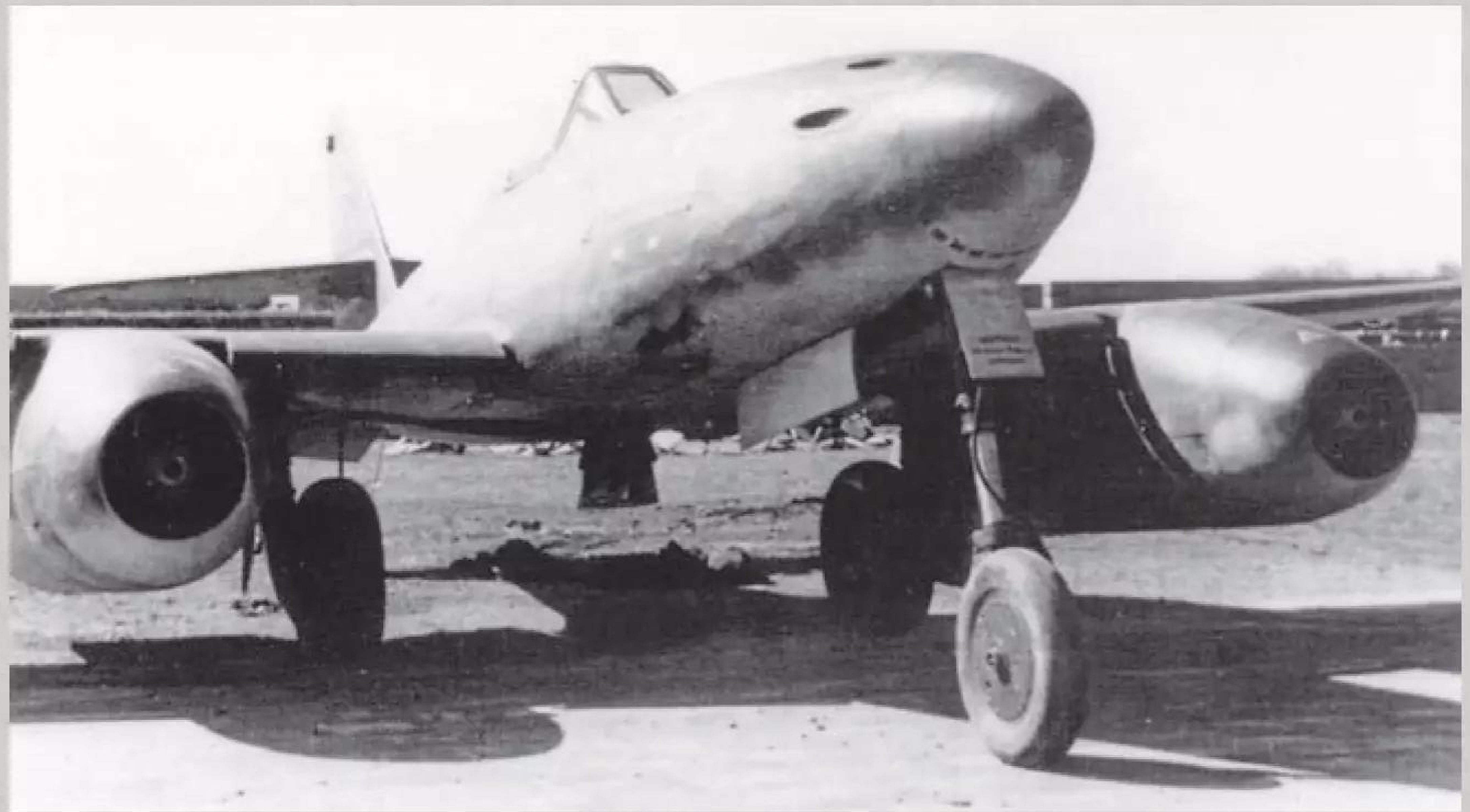
Schallmoser was one of the few JV 44 pilots who had actually been fully trained to fly the Me 262. His conversion training had just been completed when he was posted to JV 44 on March 2, 1945, arriving at Brandenburg-Briest the following day. Many of the others had never flown a twin-engine aircraft before, let alone a twin-engine jet fighter, so Galland secured a number of Siebel Si 204s for a crash course of training between March 4 and March 18.

Fighter tactics

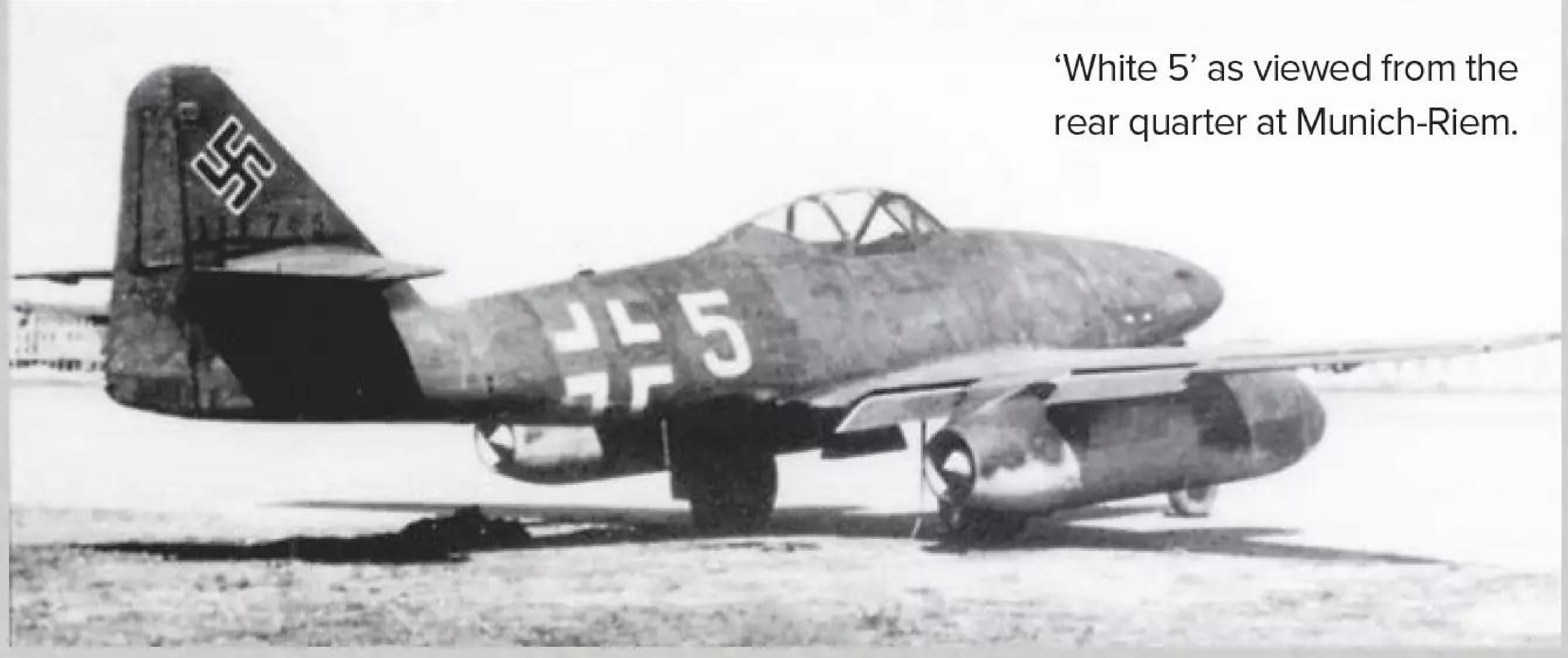
The first Me 262s arrived on March 14 and once training was complete, Galland set about developing his unit's tactics – setting out with a Kette, a formation of three jets, rather than the usual four-aircraft Schwarm – on March 22. The Kette had the advantage of enabling all three aircraft to take off side-by-side on a standard 60m-wide German runway, enabling them to maintain formation right from the start of the mission rather than wasting time forming up once airborne.

Combat operations began at the end of March when Steinhoff reported shooting down an Ilyushin Il-2 Sturmovik that had been attacking a German column on the ground.

With JV 44 now fully operational, Koller ordered Galland to transfer it south so its fighters could be used to defend fuel, arms and aircraft production facilities. After scouting out the area in his now returned BMW sports car, Galland decided on the large civil airport of Munich-Riem as his unit's new home.



Several JV 44 pilots flew Me 262 W.Nr. 111745 'White 5'. Though it is unreadable in this view, the legend on the nosewheel hatch door reads 'ACHTUNG – Nicht am Bugrad Schleppen' or 'ATTENTION – do not tow by nosewheel'. The weakness of its nosewheel was one of several Achilles heels present in the Me 262 design. In practice, the aircraft had to be towed by its mainwheels.



'White 5' as viewed from the rear quarter at Munich-Riem.

JV 44 pilot Unteroffizier Eduard Schallmoser was not a highly experienced ace like some of his fellow pilots, but he was fully trained to fly the Me 262. Even so, he still struggled to get to grips with its incredible turn of speed.

Schallmoser, right, and another pilot at Munich-Riem with JV 44's best known aircraft Me 262 'White 5'.

Pilots had to pitch in with ground crew at Munich-Riem to dig foxholes and shallow trenches where personnel could take cover in the event of an attack. The huge airport had a great runway for jets but was also characterised, like most airfields, by huge wide open spaces with little in the way of cover.

It had 35 off-field blast pens to protect aircraft from bombing raids, a large underground fuel store, three heavy and 12 light flak emplacements and a runway that was ample for the 1850m takeoff run required by the Me 262. By March 29, all of JV 44's equipment had been loaded onto a train at Berlin and ready to be transported down to Munich.

The unit had nine Me 262s at this point, all factory fresh from Messerschmitt's production lines, but six were unserviceable and one was being repaired. The aerial transfer, with all the jets now ready to fly, took place on March 31.

More training was carried out as more pilots were recruited who had no prior experience of flying the Me 262. On April 4, at 11am, Fährmann and Schallmoser set off together to attack a formation of 12 P-38 Lightnings from the USAAF's Fifteenth Air Force near Munich.

After sighting the formation and flying in to attack, Schallmoser attempted to open fire with his quartet of 30mm MK 108 cannon, only to find that nothing happened. He looked down and realised he had failed to fully disengage the safety catch. When he looked up, the Me 262's incredible speed had carried him far too close to one of the Lightnings.

He tried to turn but it was too late and he collided with it. The impact jarred him but he span away with only minor damage. Quickly finding Fährmann and preparing to return to base, he looked back and saw that the Lightning had not been so lucky – it was heading towards the ground and the pilot was bailing out.

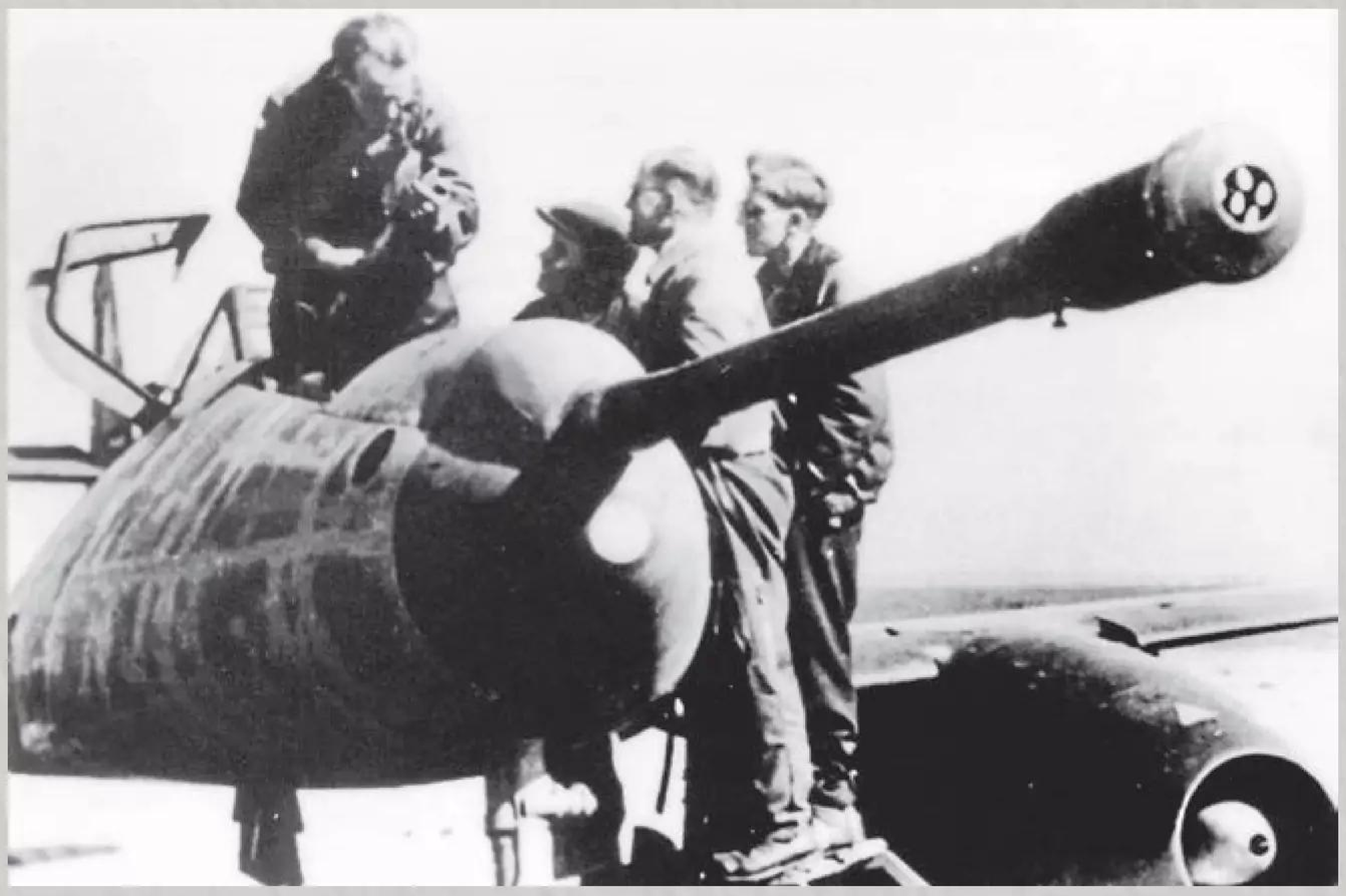
The P-38 was 44-25761, flown by Lt William Randle of the 49th Fighter Squadron, 14th Fighter Group. One of his comrades, 2nd Lt Robert Slatter, recalled: "At 11.20am at an altitude of 15,000ft I saw the Me 262 which came past our leader and towards Randle. The jet was approaching very quickly and after the leader went to the left, I saw that the tail of Lt Randle's aircraft had been completely torn off. His plane fell into a flat spin and began to fall. I watched the jet and saw Lt Randle jump out. About three minutes later, I saw the parachute, floating at a height of 1000ft. I also saw a flash of fire as his plane hit the ground."

On April 5, Steinhoff, Fährmann and three others flew out to intercept B-17s of the 379th Bomb Group and shot one of them down. Fährmann, however, suffered engine trouble and was forced to bail out near the Danube after he was attacked by the bombers' escort. He landed safely but could not return to Riem until the following day. ➤

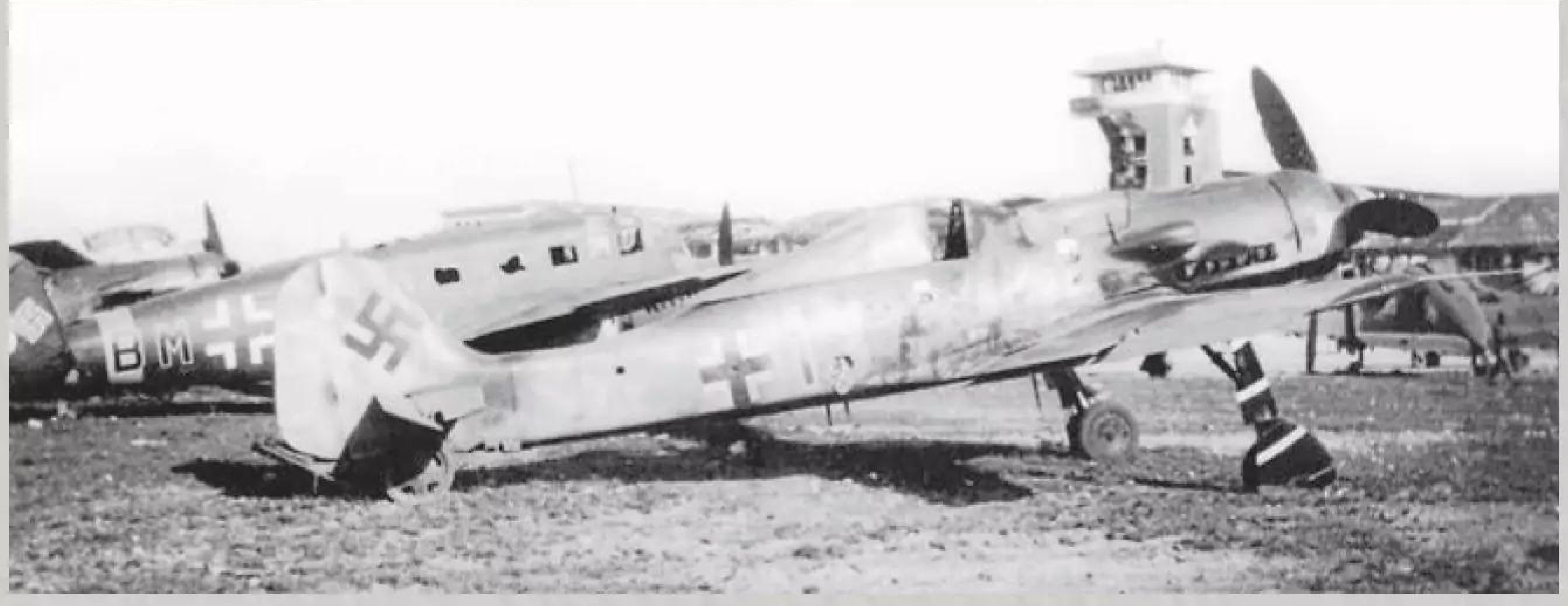
Two of the pilots who gave JV 44 its reputation as a 'squadron of aces' – Oberfeldwebel Klaus Neumann, who had previously served with IV. (Sturm)/JG 3 and had 37 victories, and Major Erich Hohagen, who had scored 55 victories but was now supposed to be recovering from a serious head injury.

Oberst Günther Lützow seated with Galland at Munich-Riem.

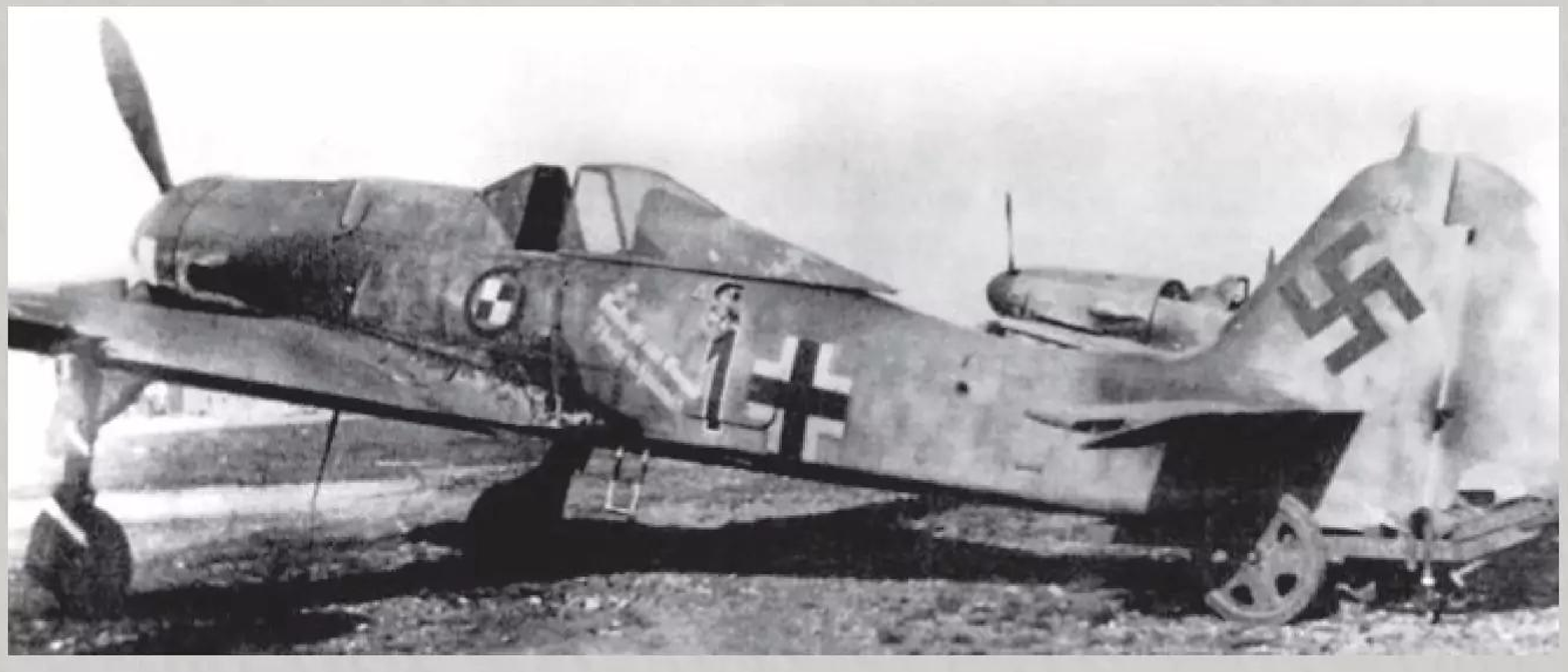
Four pilots of JV 44's Fw 190 D-flying Platzschutzschwarm – Leutnant Karl-Heinz Hofmann, Leutnant Heinz Sachsenberg (seated on the muddy mainwheel of Fw 190 D-9 'Red 3'), Hauptmann Waldemar Wübke and Oberleutnant Klaus Faber.



Just two Me 262 A-1a/U4s, fitted with the enormous 50mm Mauser MK 214 cannon, were built and one of them was brought to JV 44 for active use by Major Willi Herget. W.Nr. 111899 was used on at least two occasions, its nose remaining unpainted, but without result – except for worrying American aircrew with the sheer size of its armament.



Parked alongside one of JV 44's transport aircraft, Siebel Si 204 'White 63' is Fw 190 D-9 W.Nr. 600424 'Red 1'. The pair are pictured at the unit's heavily damaged one-time base Munich-Riem airport.



The other side of 'Red 1', the aircraft of Platzschutzschwarm leader Leutnant Heinz Sachsenberg, bears the slogan 'Verkaaft's mei Gwand I foahr in himmel!' or 'Sell my clothes, I'm going to heaven!'.

Priority target

By now the Allies had identified Riem as a priority target – any airfield where jet types were seen to operate was immediately pushed to the front of the queue – and on April 8 it was hit by a force of 228 B-17s.

JV 44 still only had 18 Me 262s and the attack resulted in six of them receiving damage from bomb fragments. Just seven had been serviceable to begin with. This was not the only effect on the unit, however. Riem's control tower, main hangar and administration buildings were wrecked and six men were killed. Fifty personnel were wounded, including two members of JV 44's ground crew.

Damage to the main runway was quickly repaired, however, and that afternoon Müller took off in Me 262 W.Nr. 111745 'White 5' to go after the B-17s. He returned to base without success.

The next attack on Riem came on April 10 when P-51 Mustangs of the 353rd Fighter Group strafed the airfield. They succeeded in destroying a trio of Me 262s and causing damage to another three. Thirteen new aircraft had just been delivered to JV 44 but by the end of the day just two were left undamaged.

Again, Müller took off after them but he encountered P-47s instead, probably of the 36th Fighter Group, and this time he was able to shoot one down.

In mid-April, JV 44 was joined by Major Wilhelm Herget, who brought with him the experimental Me 262 A-1a/U4 W.Nr. 111899. This aircraft was fitted with a 50mm Mauser MK 214 cannon, the barrel of which protruded from the nose by around 2m. This is believed to have been used with JV 44 on only two occasions and it was unsuccessful on both.

April 16 saw around 14 of JV 44's Me 262s attacking a formation of 322nd Bomb Group Martin B-26 Marauders. Galland himself led the assault and shot down two of the medium bombers. Some of the Me 262s had been equipped with the new 55mm R4M air-to-air rockets – 12

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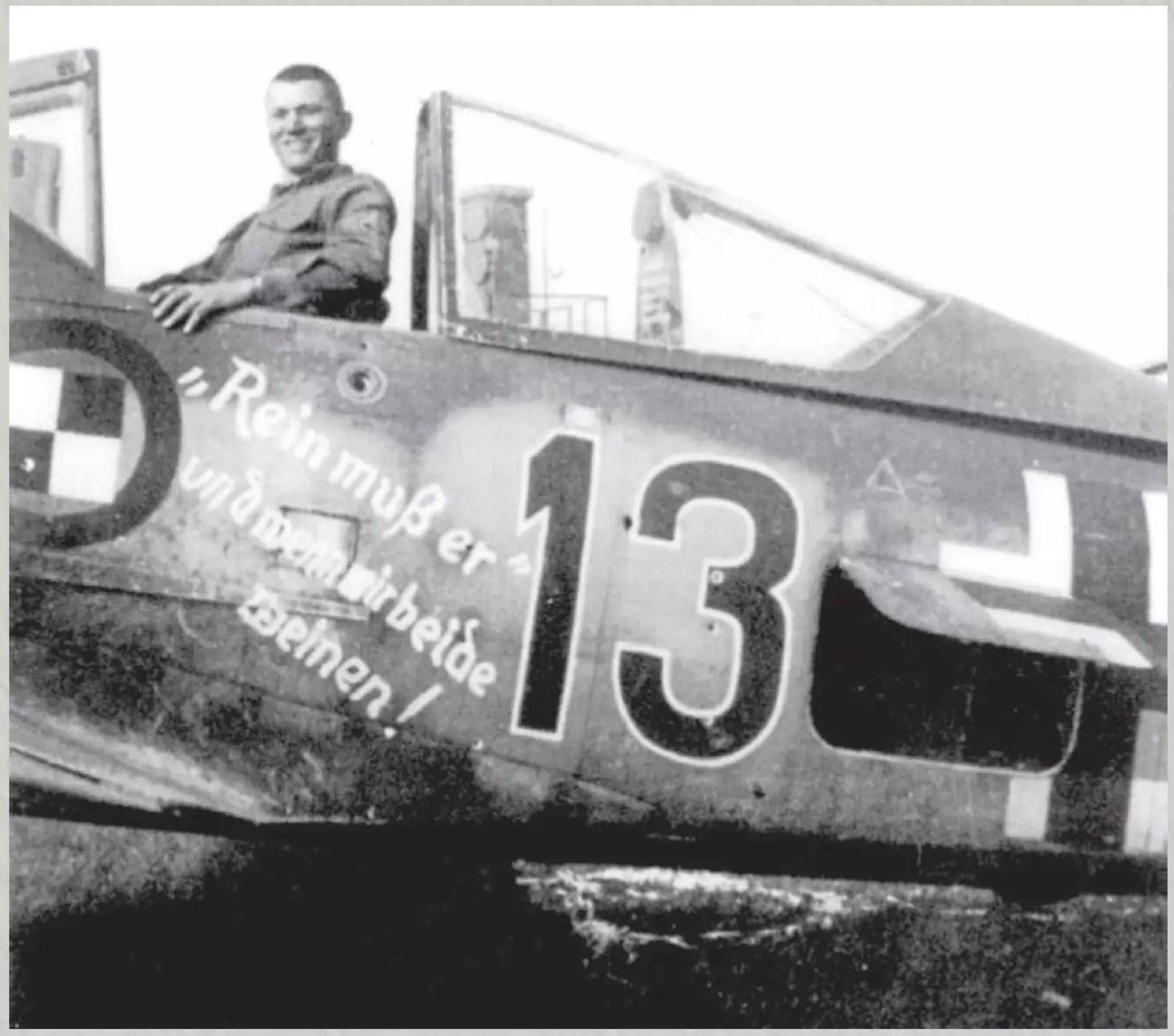
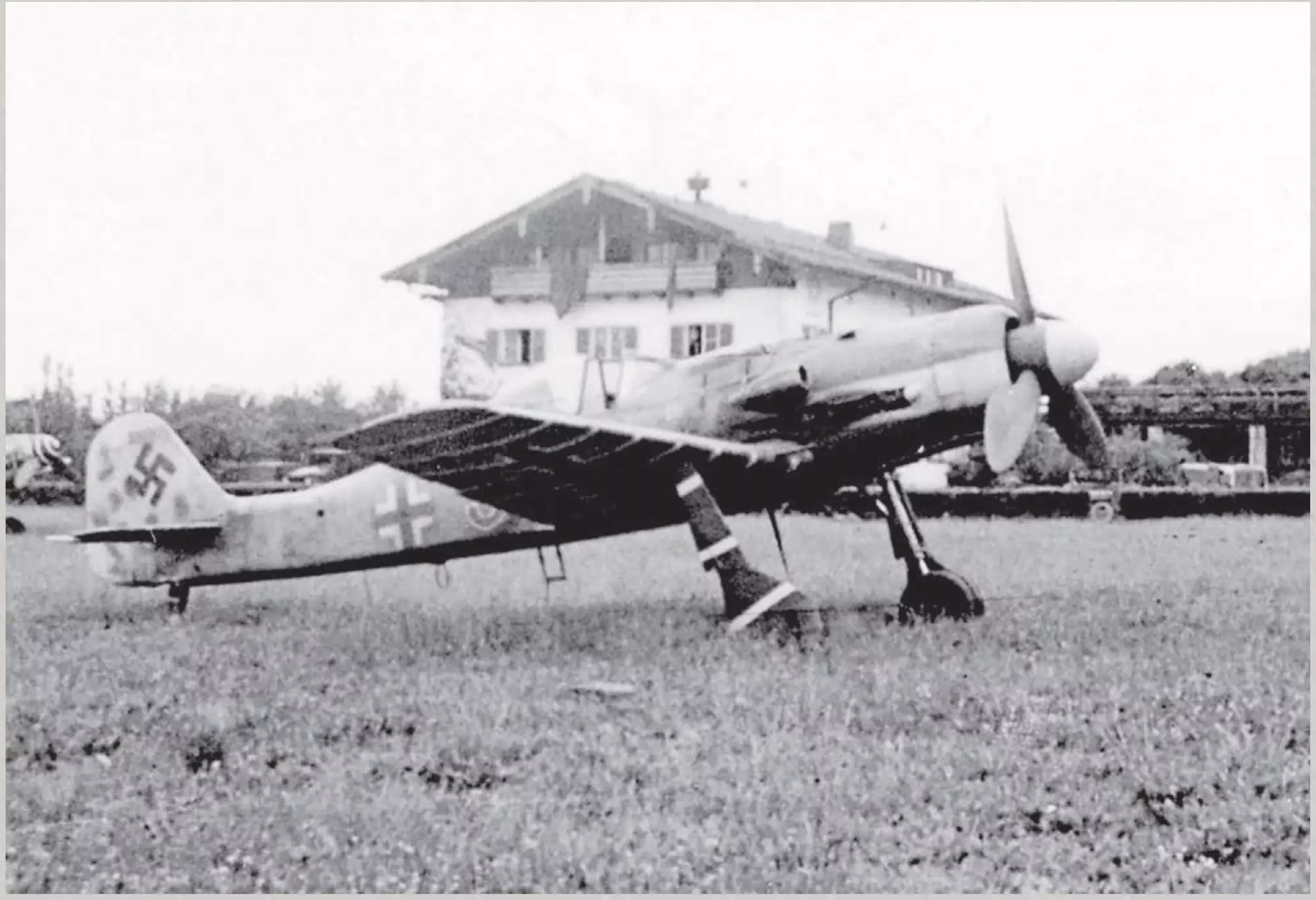
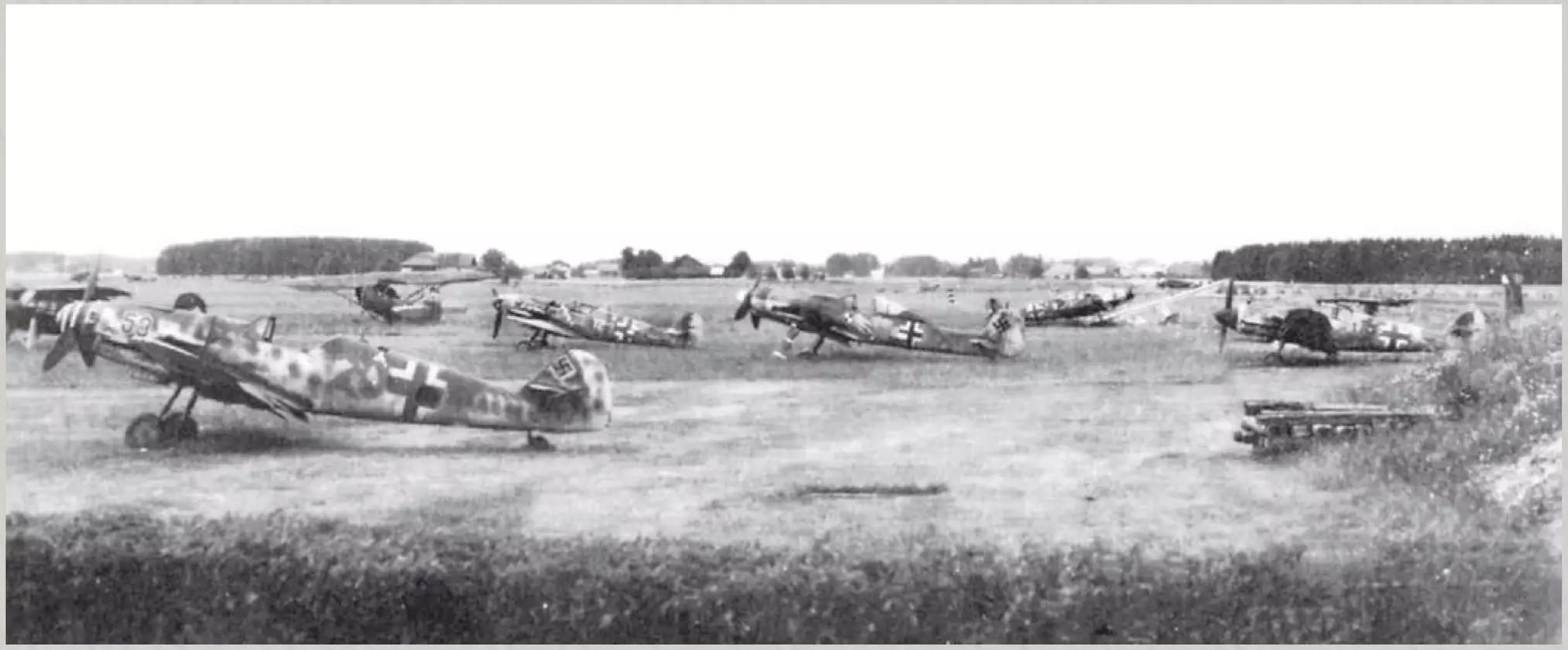

„Rein muß er" und wenn wir beide weinen!
13

Another of JV 44's Fw 190 D-9s, 'Red 13' had the slogan '"Rein muss er" und wenn wir beide weinen' or "He has to go" and then we both cry'.



JV 44's 'Red 3' pictured at Ainring.



A wide view of 'Red 13' as it was abandoned at Ainring, surrounded by Messerschmitt Bf 109 Gs of II./JG 52.

under each wing – and these were used during the attack.

Two days later, a force of six Me 262s from JV 44 was sent up against a formation of 760 B-17s that was hitting targets across southern Germany. During takeoff, Steinhoff's Me 262 hit some debris left on the runway from a bombing raid the previous day and his port wing dipped, sending him swerving to the left.

As per Galland's 'Kette' idea, Steinhoff had been flying one of three jets taking off at the same time and his sudden change in direction almost caused him to crash into Krupinski's machine, which was rolling alongside. Krupinski just managed to pull up in time but Steinhoff wasn't so lucky. He hit an embankment at the end of the runway and, loaded with fuel, his Me 262 began to burn furiously.

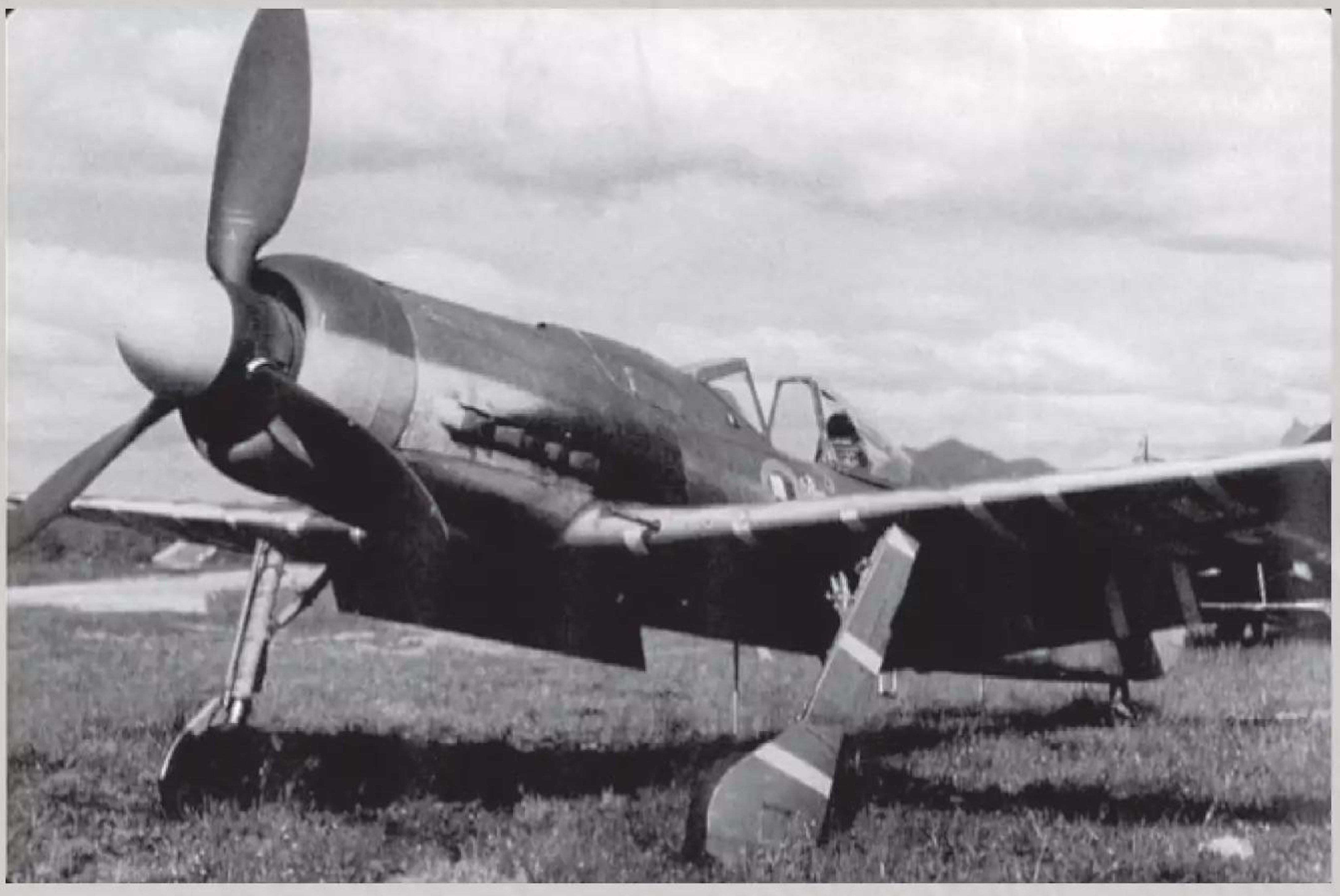
In his book The Final Hours, Steinhoff wrote: "Catapulted high into the air, the stricken bird dragged itself through several more seconds of existence. Shortly before the impact, my hands flew instinctively to the shoulder belts. I tugged so violently on the straps that my body slammed back against the seat.

"Then, all of a sudden, everything seemed to grow still. There was only the hissing of the huge flames. As if in slow motion, I saw a wheel go soaring through the air. Metal fragments and bits of undercarriage flew after it, spinning very slowly. Wherever I looked was red, deep red. Grasping the sides of the cockpit, I pulled myself up until I was standing on the parachute. I had got my feet over the cockpit rim when the rockets started exploding under the wings.

"They skittered over the field and went off with a hellish bang. Taking great leaping strides, I ran out along the wing to escape from the inferno, and my straining lungs filled with fresh air, I sank to my knees as if under the impact of a mighty blow.

"I managed to get to my feet, and as I stumbled a few steps farther everything went black – my eyes had swollen shut. I became aware of piercing pain in my wrists where the flames shooting through the cockpit floor had burned off the skin between my gloves and the sleeves of my leather jacket."

Badly wounded, Steinhoff was taken to hospital and remained there for the rest of the war.



Heavy exhaust staining is visible on the side of 'Red 13'.

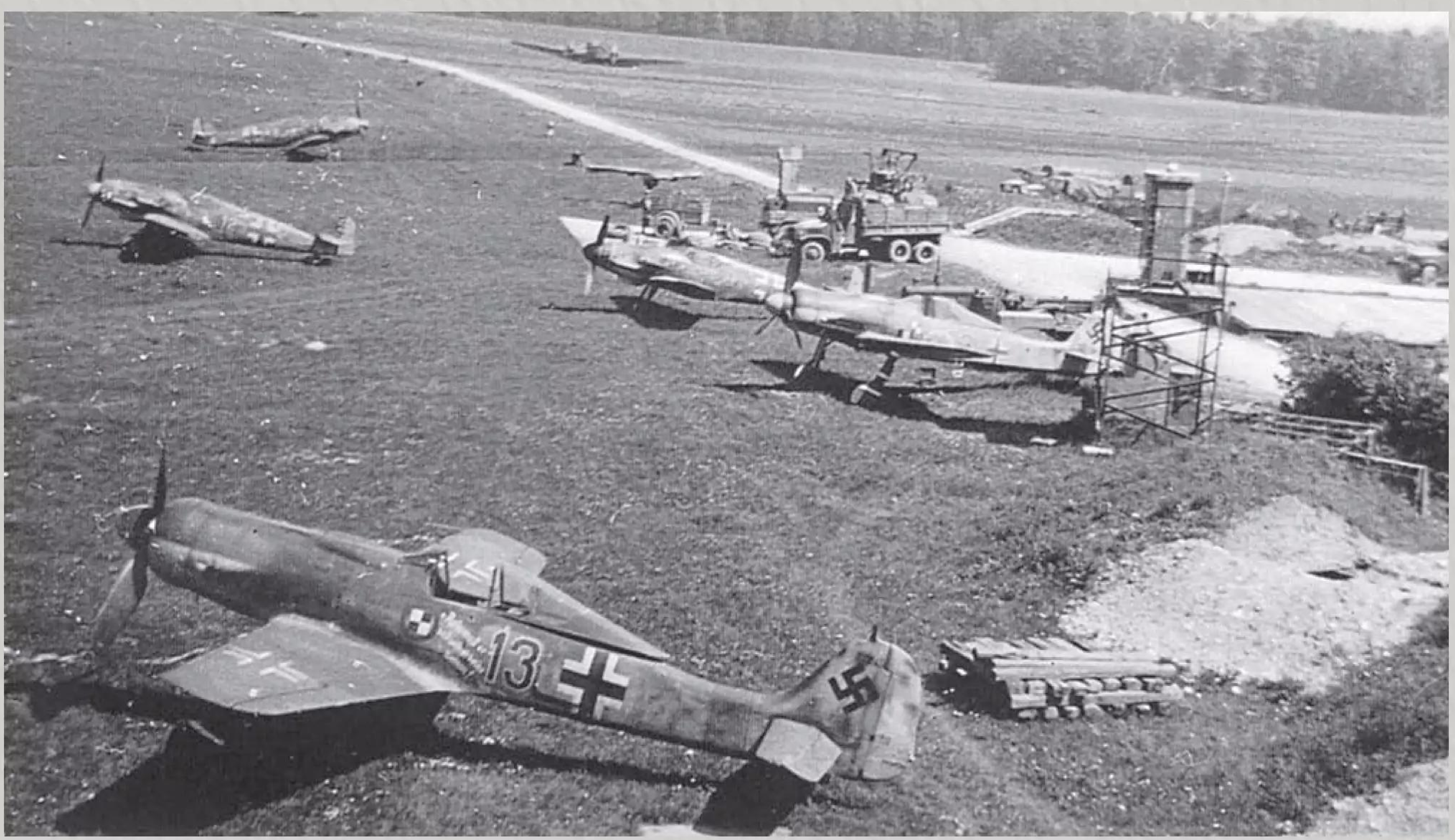
Warming up

That same day, III./KG(J) 54, which was being dissolved, attempted to transfer its aircraft over to JV 44 to replace its losses, only for most of them to be destroyed by American B-26 bombers after they were left at the transit field at Erding.

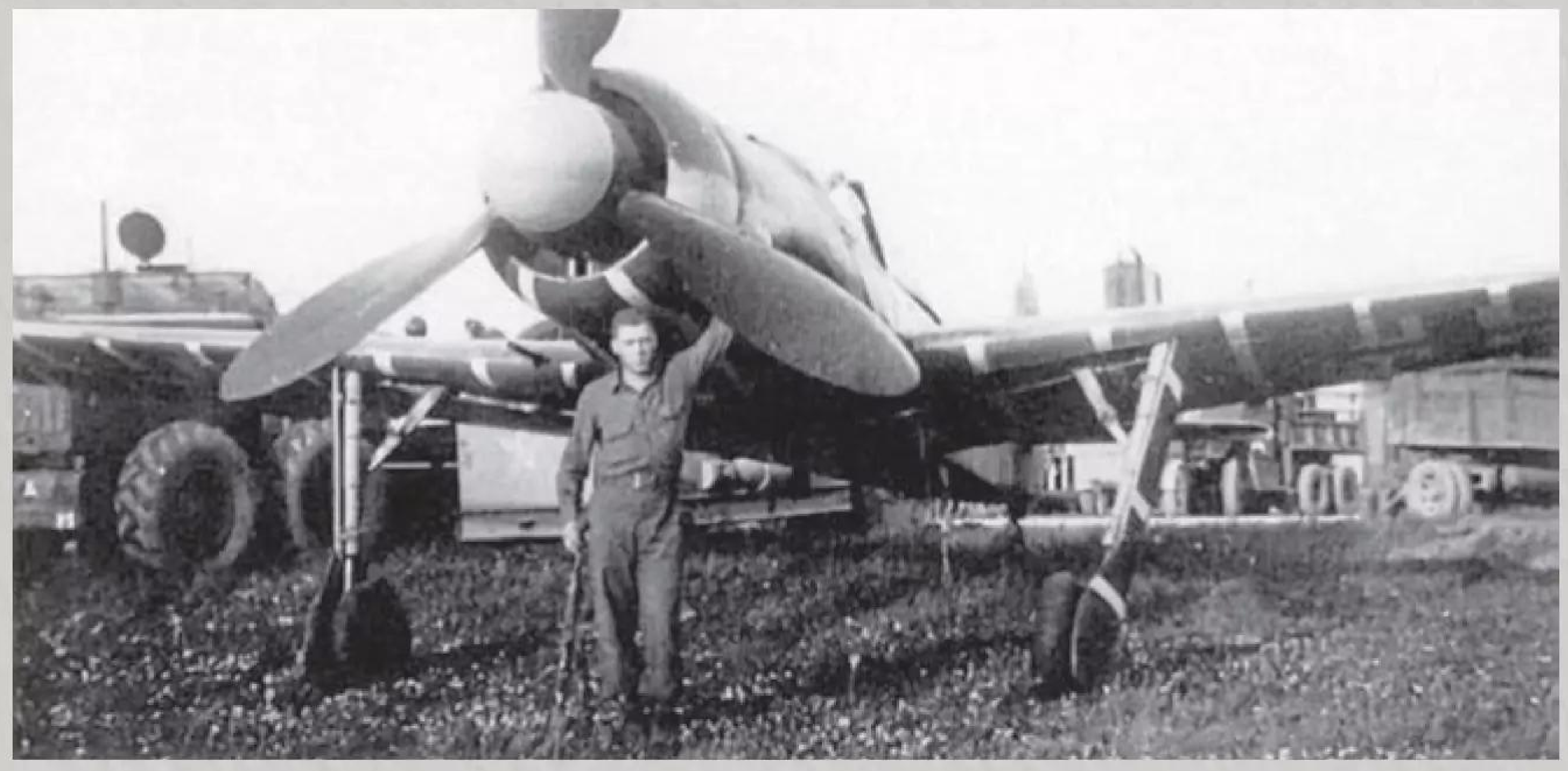
A trio of JV 44 fighters downed a B-26 on April 19 but perhaps the unit's greatest success of the war came on April 20 when it attacked another formation of Marauders of the 323rd Bomb Group at around 11am near Memmingen.

One Me 262 shot out the port engine of 1st Lt Dale E Sanders' B-26B-30-MA 41-31918, 'Can't Get Started aka Texas Tiff then another fired an R4M rocket into its fuselage, blowing a huge chunk out of it.

A waist gunner in a nearby B-26, Technical Sergeant Robert M Radlein, later



Another view of 'Red 13', this time with a second JV 44 Fw 190 D-9.



An American GI poses with a JV 44 Fw 190 D-9 – the unevenly placed white stripes on the underside of the aircraft are clearly visible.

remembered: "Our top turret gunner, Staff Sergeant Edmundo Estrada, started firing. He had raised his guns straight up and was shooting at a Me 262 passing overhead. He yelled: 'I got him! I got him!' because he had seen all kinds of metal and debris come flying past our airplane. He was convinced he had hit it but unfortunately the pieces of metal had not come from the German fighter but from our No. 3 airplane, piloted by 1st Lt Sanders.

"I looked out of my left waist window at Sanders' airplane as it started to drop away from the main formation, and I was able to see the entire radio compartment. The fighter attack had stripped away all the metal from the top of the wing, as well as the compartment for the radio man and navigator – I guess from just aft of the windows in the pilot's compartment. And, of course, one engine was also gone. As I watched the bomber falling out of formation, I reached over to snap on my chest pack parachute. Things were warming up pretty fast."

Müller, who was one of the attackers, flying 'White 15', fired an R4M rocket into B-26F-1-MA 42- 96256 'Ugly Duckling', flown by 1st Lt James L Vining.

Vining himself later recalled: "In a fast glance over my shoulder, I saw a jet rapidly approaching us in a slight turn, with muzzle flashes around the four 30mm cannon in the nose. I turned my attention back to my position, tucking my wing closer to No. 4, and at that instant a terrific blast went off below my knees and the airplane rolled to the right.

"Sensing that my right leg was gone, I looked toward my co-pilot and while ordering him to take his controls, I noted that the right engine was at idle speed. So, in one swift arcing motion of my right hand, I hit the feathering button, moved to the overhead rudder trim crank and trimmed the airplane for single engine operation and – just as rapidly – pressed the intercom button to order the bombardier to jettison the two tons of bombs.

"We were losing altitude at 2000ft per minute, which slowed to 1000ft per minute with the load gone."

Incredibly, Vining managed to keep his aircraft aloft long enough, despite repeated attempts by JV 44's fighters to bring it down, to crash-land it behind Allied lines.

Schallmoser was also involved in the attack but again he struggled to get his four MK 108s to fire. He looked down again, to check the safety, but in that split second his jet took him too close to one of the B-26s. His 'White 11' was sliced open by the propeller blades of the bomber's starboard engine. Gushing black smoke, its right wing shedding debris, Schallmoser's Me 262 ➤

The burned out shell of Oberst Johannes Steinhoff's Me 262 after it crashed on takeoff on April 18, 1945. Steinhoff, effectively JV 44's second in command, survived but was badly burned and spent the rest of the war in hospital.

Galland walks beside Oberst Günther Lützow at Munich-Riem.

rolled over and plunged through the bomber formation. The pilot managed to bail out and floated down on his parachute – only to land in the garden of his mother's home in Lenzfried-im-Allgäu. Stunned, he packed up his parachute as best he could before staggering inside.

As he sat down at the kitchen table, nursing his leg, struck by a glancing blow by the aircraft as he fell away from it, his mother set about making him pancakes.

The leg injury turned out to be more serious than he thought, however, and he ended up in the same hospital as Steinhoff for five days.

JV 44 had brought down three B-26s and seriously damaged another seven. The only German aircraft lost was Schallmoser's Me 262.

Dark humour

Around this time there was another unusual addition to JV 44 – five Fw 190 D-9s. These 'long noses' were brought in to defend the Me 262s when they were at their most vulnerable – as they landed and took off. Their pilots formed a separate unit, a Platzschutzschwarm, within JV 44 led by Leutnant Heinz Sachsenberg. Each had its underside painted bright red with unevenly spaced white stripes to provide easy recognition for flak gunners on the ground who might otherwise be tempted to open fire on them.

The Focke-Wulfs also had darkly humorous individual slogans painted on their fuselage sides. The words on Sachsenberg's own aircraft, Red 1, were 'Verkaafts mei Gwand I foahr in Himmel' or 'Sell my clothes, I'm going to heaven', Red 3's slogan read 'Im Auftrage der Reichsbahn' or 'By Order of the State Railway', Red 4's was 'Der nachste Herr, deselbe Dame!' or 'The next man, the same woman!' and Red 13's was 'Rein muss er und wenn wir beide weinen' or 'He has to go and then we both cry'.

The pilots of these aircraft were ordered to keep a watchful eye out for enemy fighters but only to defend the Me 262s, rather than to go on the offensive and pursue any attackers. They were also barred from attempting to fly their Fw 190s alongside the Me 262s for any reason. No radio contact was made between the pilots of the Fw 190s and those of the jets either.

April 24 saw 11 of JV 44's now growing number of Me 262s set off at 9.50am to combat yet another formation of B-26s, this time from the 17th Bomb Group. Most of them were equipped with R4M rockets.

As the jets approached the bomber formation, they began to launch salvos of rockets and one of the B-26s, 42-107729 'Stud Duck', was hit in the rear. Its tailplane was torn off, a wing and the side of the fuselage were damaged and the bomb bay doors were blown open.

It peeled away to the right and plummeted to the ground. Only one crewman survived – gunner Staff Sergeant Edward F Truver, who was thrown clear by the force of the blast and able to open his parachute.

Also shot down by an R4M was B-26B 42-95991 'Skipper', flown by 1st Lt Leigh Slates. JV 44 flew another sortie in the afternoon but this time the Americans suffered no casualties and Oberst Günther Lützow failed to return.

On April 25, the experimental Me 262 A-1a/U4 was taken into action against B-26s of the 323rd Bomb Group. It was alone and despite making an attack run on a bomber formation it failed to fire – probably due to one of the regular mechanical failures that afflicted its massive 50mm Mauser cannon.

Brake! Brake!

The following day Galland himself led another sortie, this time against the B-26 Marauders of the 17th Bomb Group. He set off with his men at 11.30am.

In The First and The Last, he wrote: "On April 26, I set out on my last mission of the war. I led six jet fighters of the JV 44 against a formation of Marauders. Our own little directing post brought us well into contact with the enemy. The weather: varying, clouds at different altitudes, with gaps, ground visible in about only three tenths of the operational area.

"I sighted the enemy formation in the district of Neuburg on the Danube. Once again I noticed how difficult it was, with such great difference of speed and with clouds over the landmarks, to find the relative flying direction between one's own plane, and that of the enemy, and how difficult it was to judge the approach.

"This difficulty had already driven Lützow to despair. He had discussed it repeatedly with me, and every time he missed his run-in, this most successful fighter

Flown by 1st Lt Dale E Sanders, B-26B-30-MA 41-31918 'Can't Get Started aka Texas Tiff' was shot down by JV 44 fighters on April 20 near Memmingen.

commodore blamed his own inefficiency as a fighter pilot. Had there been any need for more confirmation as to the hopelessness of operations with the Me 262 by bomber pilots, our experiences would have sufficed.

"But now there was no time for such considerations. We were flying in an almost opposite direction to the Marauder formation. Each second meant that we were 300 yards nearer. I will not say that I fought this action ideally, but I led my formation to a fairly favourable firing position.

"Safety catch off the gun and rocket switch. Already at a great distance we met with considerable defensive fire. As usual in a dogfight, I was tense and excited. I forgot to release the second safety catch for the rockets. They did not go off. I was in the best firing position, I had aimed accurately and pressed my thumb flat on the release button – with no result. Maddening for any fighter pilot.

"Anyhow, my four 30mm cannons were working. They had much more firing power than we had been used to so far. At that moment, close below me, Schallmoser, the jet-rammer, whizzed past. In ramming he made no distinction between friend or foe."

Schallmoser, flying 'White 14', fired off his R4M rockets and blew up one of the B-26s.

Galland wrote: "This engagement had lasted only a fraction of a second – a very important second to be sure. One Marauder of the last string was on fire and exploded. Now I attacked another bomber in the van of the formation. It was heavily hit as I passed very close above it.

"During this breakthrough I got a few minor hits from the defensive fire. But now I wanted to know definitely what was happening to the second bomber I had hit. I was not quite clear if it had crashed. So far I had not noticed any fighter escort. Above the formation I had attacked last, I banked steeply to the left, and at this moment it happened: a hail of fire enveloped me. A Mustang had caught me napping."

In fact, Galland had been hit by defensive fire from one of the B-26s – Technical Sergeant Henry Dietz, a former weapons instructor, had targeted him as he tried to assess the damage he had caused to his most recent victim.

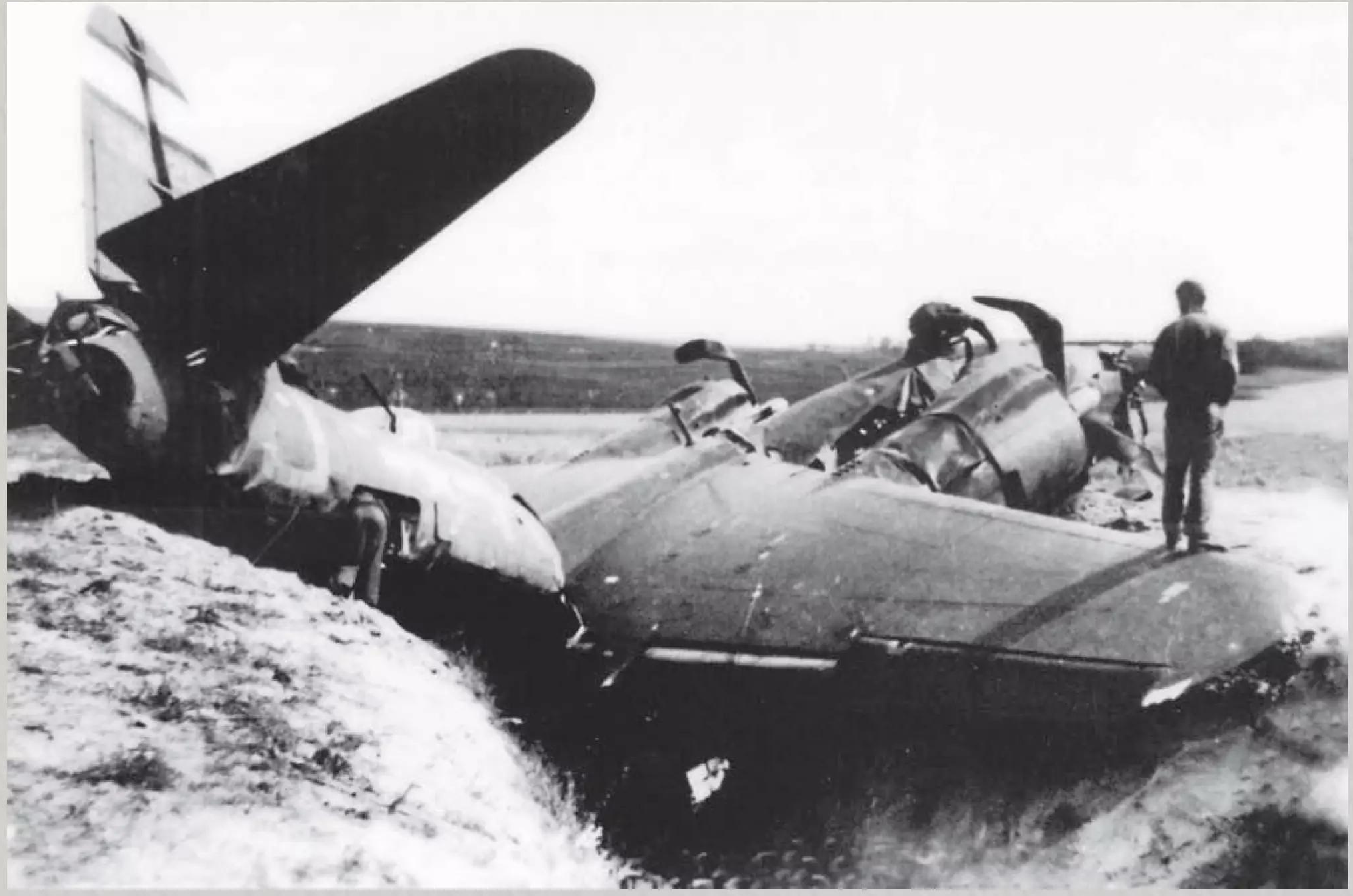
Dietz remembered: "Probably the most important thing I remembered from gunnery school was to fire short bursts and forget about the tracer bullets – just use your sights.

"That day, we were flying as flight leader, and we were about 10 minutes from the target. I flew in the waist position from where I could see all the mechanical parts of the aircraft. I had never seen a jet before. Galland slowed down to the speed of the B-26 so that he could observe and take score. I thought 'dummy'. He was flying low, right into the sights of my machine gun. I shot a burst. Nothing happened. A little higher, a little lower, I just kept shooting."

As Dietz poured fire into Galland's machine, the pilot of a Republic P-47 Thunderbolt escort fighter, 1st Lt James Finnegan of the 10th Fighter Squadron, 50th Fighter Group, had also spotted him.

Finnegan later recalled: "I was leading the top-cover of P-47s that was escorting the B-26s to their target. As I gazed down I saw two objects come zipping through the formation, and two bombers blew up immediately.

"I watched the two objects go through the bomber formation, and thought 'That can't be a prop job, it's got to be one of the 262 jets'. I was at about 13,000ft and ➤



The broken-backed wreck of B-26F-1-MA 42-96256 'Ugly Duckling', flown by 1st Lt James L Vining. Vining was badly injured when his aircraft was hit by an R4M rocket fired by one of JV 44's Me 262s but he still managed to pilot it all the way down to crash-land behind Allied lines.

The nose art of Martin B-26 Marauder 42-107729 'Stud Duck'. The aircraft was shot down by JV 44 jets on April 24, 1945, with only one crew member surviving.

The Irish Shillalah

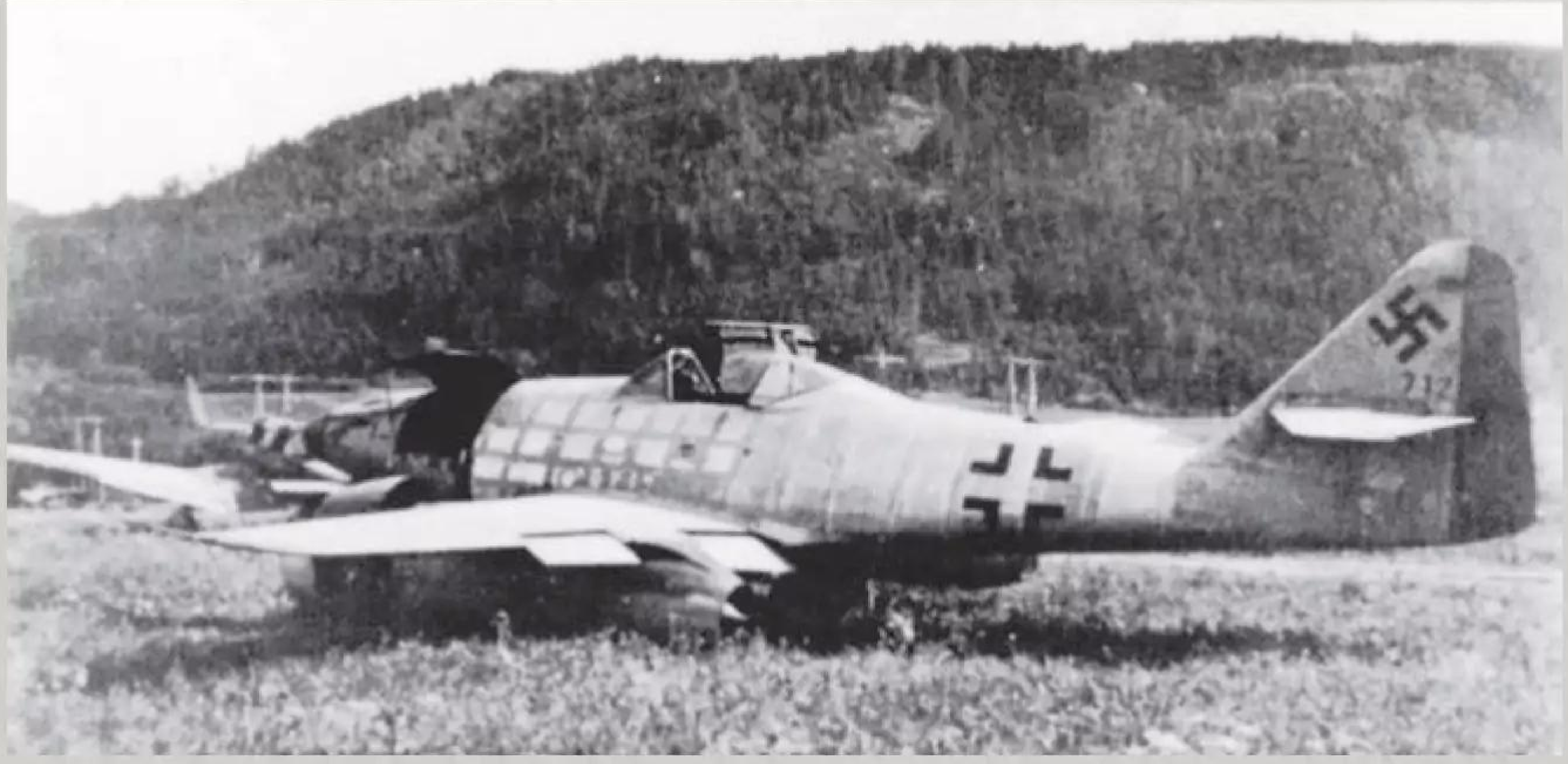
Seated atop his Republic P-47 Thunderbolt 'The Irish Shillalah' is 1st Lt James J Finnegan, left. The 10th Fighter Squadron, 50th Fighter Group, pilot shot up Adolf Galland's Me 262 and forced him to make a hasty landing. The German general met Finnegan after the war and the pair became friends.

estimated them to be at about 9000-10,000. They were climbing, and I pulled a split-S toward the one that turned left, and almost ended up right on top of him – about 75 yards away.

"I gave a three second burst and saw strikes on the right-hand engine and wing root. I was going so fast, I went right through everything, and guessed my speed at about 500mph. I recorded it as a probable. I was flying a D model Thunderbolt with a bubble canopy, a natural metal finish and a black nose. The 262 had green and brown mottled camouflage with some specks of yellow. That turned out to be my last flight in a P-47."

Galland wrote: "A sharp rap hit my right knee. The instrument panel with its indispensable instruments was shattered. The right engine was also hit. Its metal covering worked loose in the wind and was partly carried away. Now the left engine was hit too. I could hardly hold her in the air.

"In this embarrassing situation I had only one wish: to get out of this crate, which now apparently was only good for dying in. But then I was paralysed with terror of being shot while parachuting down. Experience



At the end of the war there was no paint available for new aircraft and this one, Me 262 W.Nr. 111712 entered service with JV 44 in bare metal finish with lines of panel gap filler paste giving it a very distinctive look.

had taught us that we jet fighter pilots had to reckon on this. I soon discovered that my battered Me 262 could be steered again after some adjustments.

"After a dive through the layer of cloud I saw the Autobahn below me. Ahead of me lay Munich and to the left Riem. In a few seconds I was over the airfield. It was remarkably quiet and dead below. Having regained my self-confidence, I gave the customary wing wobble and started banking to come in.

"One engine did not react at all to the throttle. I could not reduce it. Just before the edge of the airfield I therefore had to cut out both engines. A long trail of smoke drifted behind me. Only at this moment I noticed that Thunderbolts in a low-level attack were giving our airfield the works.

"Now I had no choice. I had not heard the warnings of our ground post because my wireless had faded out when I was hit. There remained only one thing to do: straight down into the fireworks. Touching down, I realised that the tyre of my nosewheel was flat. It rattled horribly as the earth again received me at a speed of 150mph on the small landing strip.

"Brake! Brake! The kite would not stop. But at last I was out of the kite and into the nearest bomb crater. There were plenty of them on our runways. Bombs and rockets exploded all around; bursts of shells from the Thunderbolts whistled and banged.

"A new low-level attack. Out of the fastest fighter in the world and into a bomb crater, that was an unutterably wretched feeling. Through all the fireworks an armoured tractor came rushing across to me. It pulled up sharply close by. One of our mechanics. Quickly I got in behind him. He turned and raced off on the shortest route away from the airfield. In silence I slapped him on the shoulder.

"He understood better what I wanted to say than any words about the unity between flying and ground personnel could have expressed.

"The other pilots who took part in this operation were directed to neighbouring airfields or came into Riem after the attack. We reported five certain kills without loss to ourselves. I had to go to Munich to a hospital for treatment of my scratched knee. The X-ray showed two splinters in the kneecap. It was put in plaster. A fine business."

With Galland now out of action and Steinhoff still in hospital, Oberstleutnant Heinz Bär assumed operational command of JV 44. On April 28, the unit received orders to relocate to Salzburg-Maxglan, where it was to operate from woodland positions along the sides of the Munich-Salzburg Autobahn. This proved to be JV 44's final move.

On May 4, with the Americans closing in, the unit destroyed its Me 262s by placing grenades in their engine intakes. The surviving pilots were captured and taken in for interrogation. Galland surrendered to American forces the following day and JV 44 was no more. ■

For more, see:
SPITFIRES OVER BERLIN
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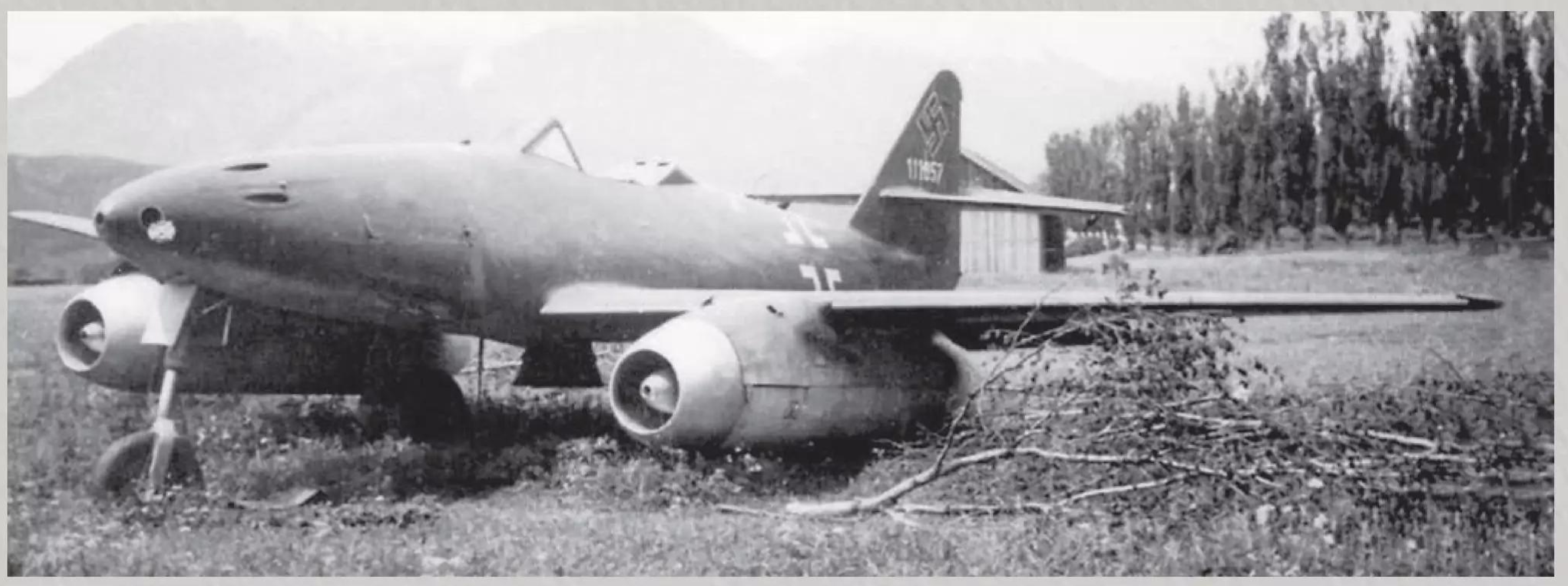
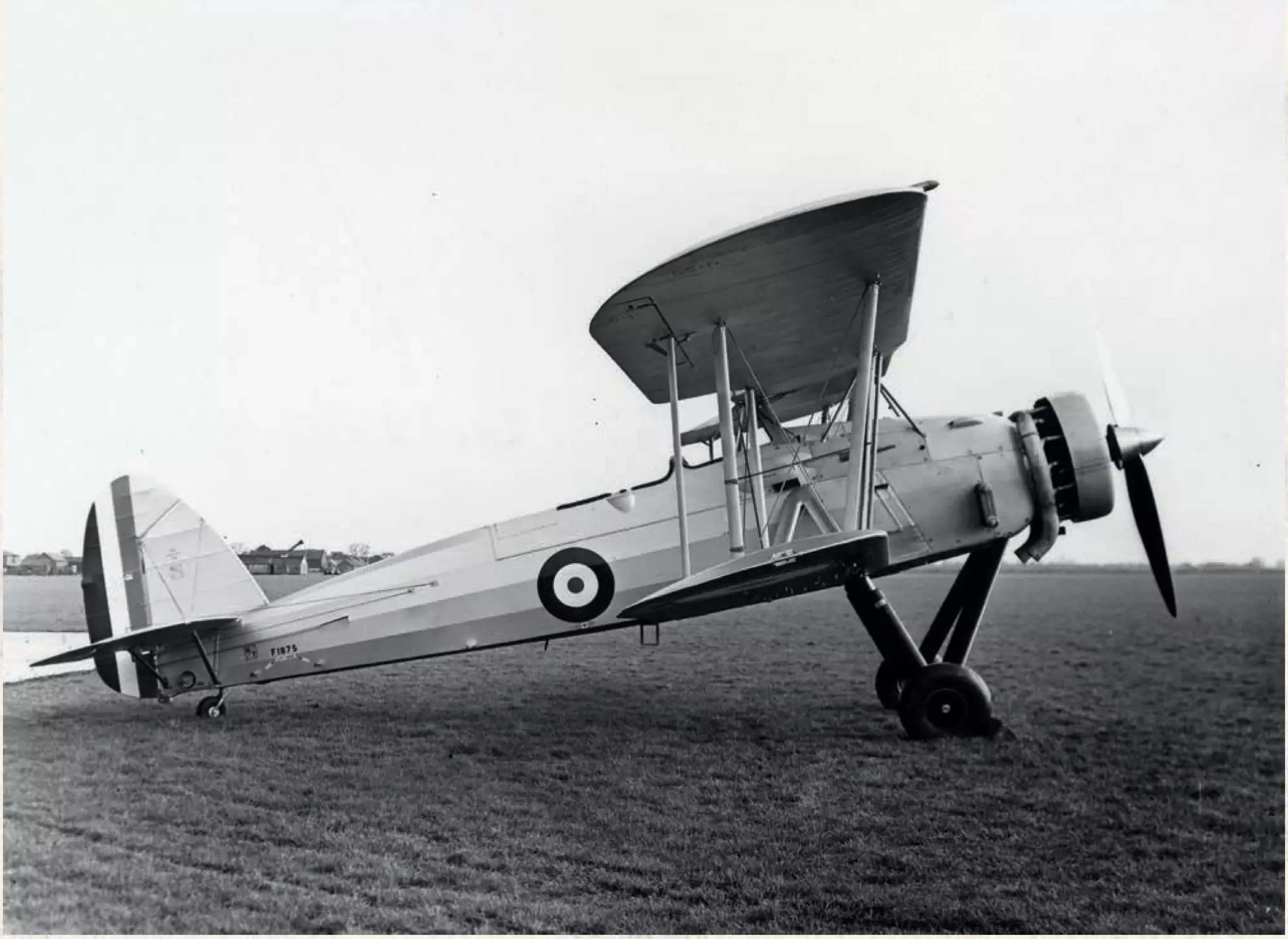


Another postwar shot of a JV 44 Me 262, this time W.Nr. 500490, which was captured relatively intact.



The Fairey TSR (construction number F1875) as it first flew on 21 March 1933 from Great West Aerodrome in the hands of Chris Staniland, powered by an Armstrong Siddeley Panther.

Torpedo bomber to the Fleet Air Arm

In 1930, the Fleet Air Arm (FAA) of the Royal Air Force (RAF) had two main suppliers of aircraft: Blackburn Aircraft Company and Fairey Aviation. Fairey had supplied fighters, bombers, and reconnaissance aircraft to the FAA since the end of the First World War. Blackburn exclusively provided torpedo aircraft since 1923. The torpedo was the main weapon for the FAA. It was the only means to damage and disable the ships of an enemy battle fleet—using sub-surface running, self-propelled explosive projectiles. Other aircraft classes mainly supported the torpedo aircraft or the ships of the fleet. Fairey was not prepared to let its rival succeed unchallenged in this area.

In March 1928, the Air Ministry and Admiralty put a specification out to the industry for a torpedo aircraft. In fact, a new aircraft had only just been ordered — the Blackburn Ripon Mk II was an improvement of an earlier prototype built to a 1923 requirement. Although the Ripon II was initially considered an interim type, it would in fact go on to equip the FAA into the late 1930s (its life extended by a couple of years by the addition of a new air-cooled engine and a new name, the Baffin). Nevertheless, a new specification was issued. Specification M.5/28 was for a 'two-seater torpedo carrying ship-plane' with a performance somewhat better than the Ripon and which could carry the new 18in Mk X torpedo.

Submissions were received from Handley-Page, Blackburn and Fairey.

Fairey's design was a large, conventional biplane with broad-chord, slightly swept wings with rounded tips. It was to be powered by a Rolls-Royce F.10 engine (which would later become the Kestrel) and was designed to carry the streamline-body Mk X torpedo partially recessed within the fuselage. Specification M.5/28 was, however, cancelled in January 1930 and a new specification, M.1/30, issued. One factor was the end of production of the Mk X torpedo, amid a short-lived period in which the Royal Navy (RN) began to move to a larger, heavier, aerial torpedo. The development of a new weapon weighing up to 1,900lb had been initiated in 1928 and was known as the Type K.

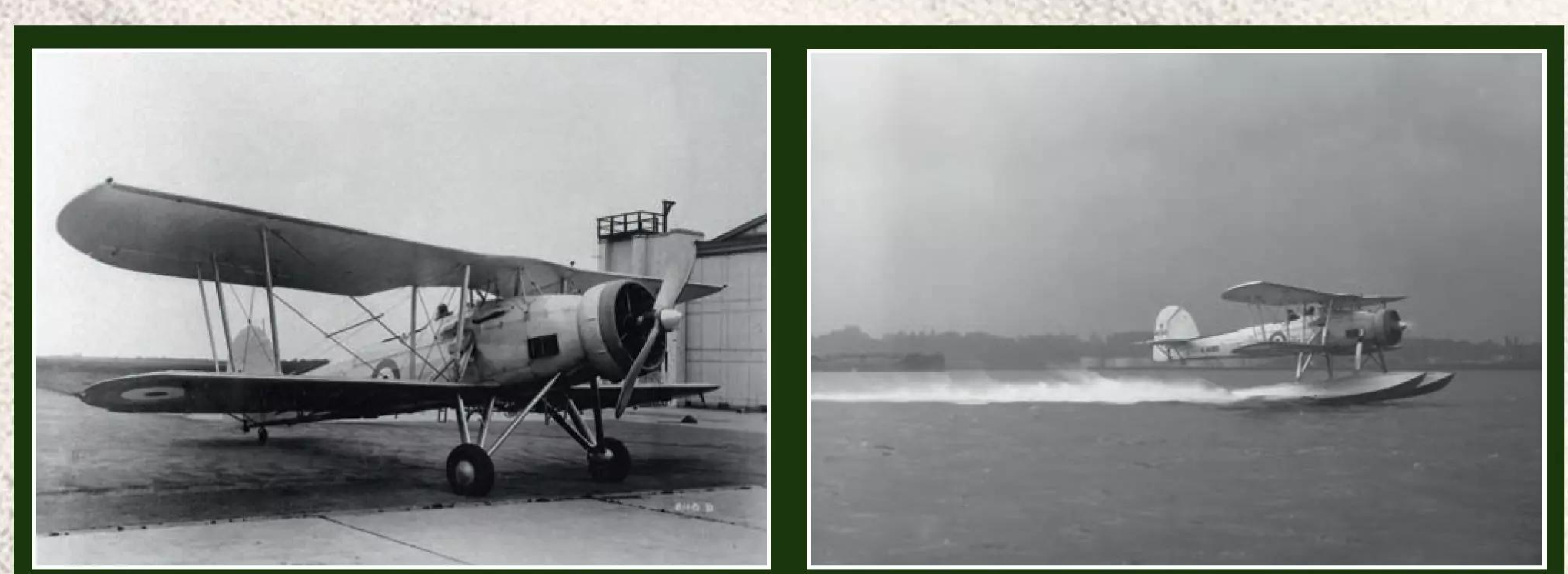
This emerged as a torpedo with an overall weight of 1,866lb and 700lb of explosive, more than double the 320lb of the earlier Mk VIII torpedo, but at the expense of a longer range.

Fairey was one of five companies to submit a proposal, presumably with a developed version of its M.5/28 design, although no details are available for its later submission. Once again, the specification was cancelled (this time the Air Ministry had decided that aerial torpedoes need not weigh more than 1,500lb, so the larger aircraft was not needed) but not before prototypes were ordered from three companies — Fairey not among them. The M.1/30A contenders would go on to undergo rather leisurely testing. An aircraft derived from Blackburn's design evolved into the B-6, which received an order from the Fleet Air Arm as the Shark, and would go on to enter squadron service in 1935.

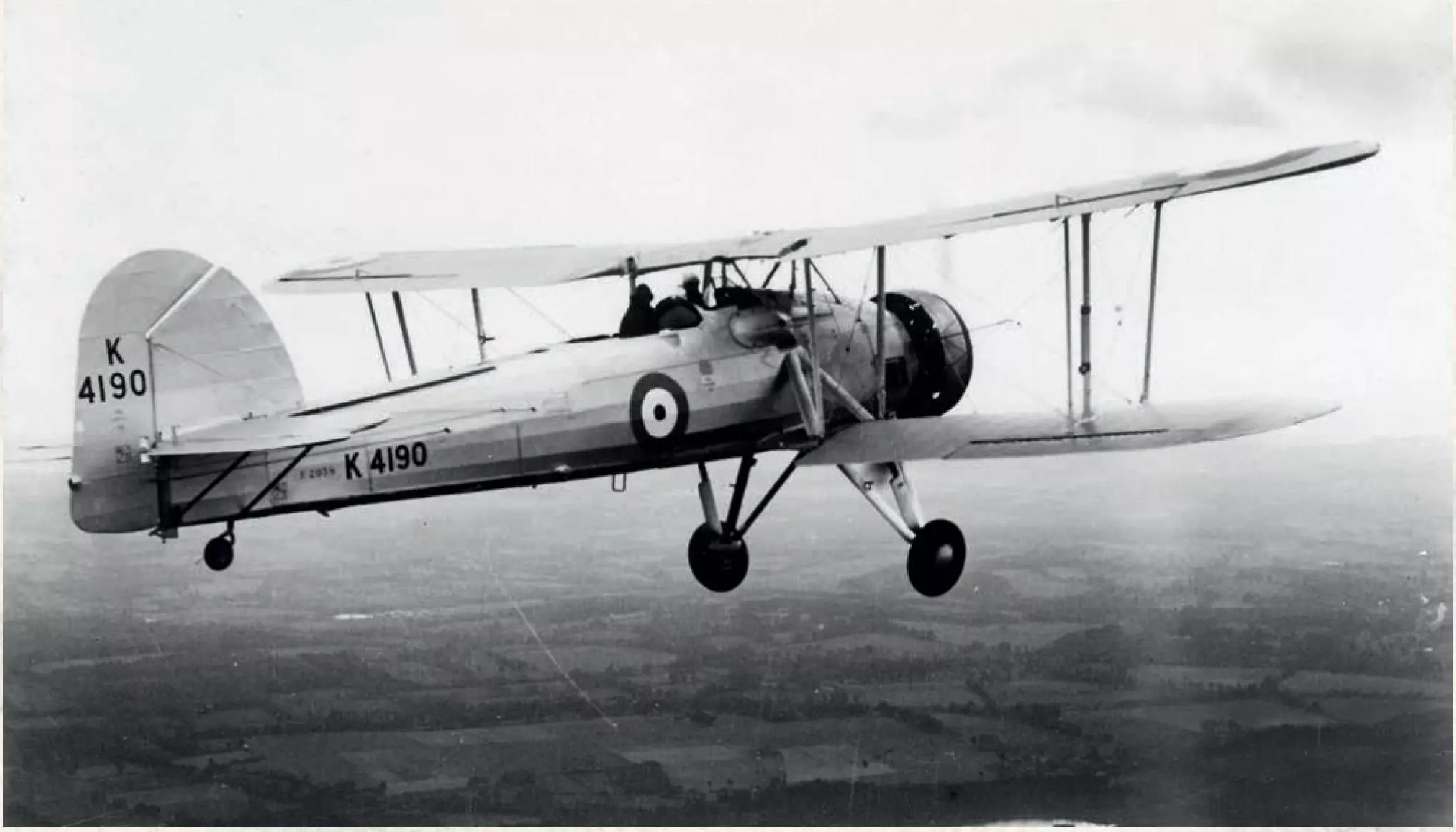
It seemed that Fairey would once again miss out on the chance to supply the FAA with a torpedo aircraft. Another specification issued in 1930, however, was for a replacement for the Fairey's venerable III/Seal family in FAA service (S.9/30). The role of this aircraft would be reconnaissance, and directing (or 'spotting') the fall of shot of the Royal Navy's big-gun warships. They also had a subsidiary role as light bombers, carrying small bombs on carriers beneath the wings.

As Blackburn had been virtually the sole supplier of torpedo aircraft to the FAA since 1923, Fairey had had a similar near-monopoly with spotter/reconnaissance aircraft since 1924. The company therefore had a good chance of its own aircraft being successful. There was stiff competition, however — six companies prepared designs, though in the end not all of them made submissions. Fairey did so in October, and was rewarded with an order for a prototype. The Fairey S.9/30, developed under chief designer Marcel Lobelle, represented a break from the tried-and-tested layout of the III series, with its long, unswept and unstaggered two-bay wings. Arguably, the S.9/30 owed more to the M.5/28 torpedo aircraft, with wings in particular of a very similar plan-form — single bay, staggered, and slightly swept, with a shorter span and greater chord than Fairey's previous spotter-reconnaissance types. In common with most Fleet Air Arm types, the S.9/30 was required to be convertible from a landplane (i.e. with a wheeled undercarriage, even if it was to operate mainly from a carrier deck) to a floatplane. The crew would be three-strong — a pilot, an observer (the Fleet Air Arm term for a specialist navigator) and a radio operator, who would also operate the defensive guns (a Telegraphist Air Gunner, or TAG in FAA parlance). To power the S.9/30, Fairey chose the 525hp Rolls-Royce Kestrel IIMS, a liquid-cooled V12 engine that used partial steam-cooling to reduce the size of radiators needed and therefore cut aerodynamic drag.

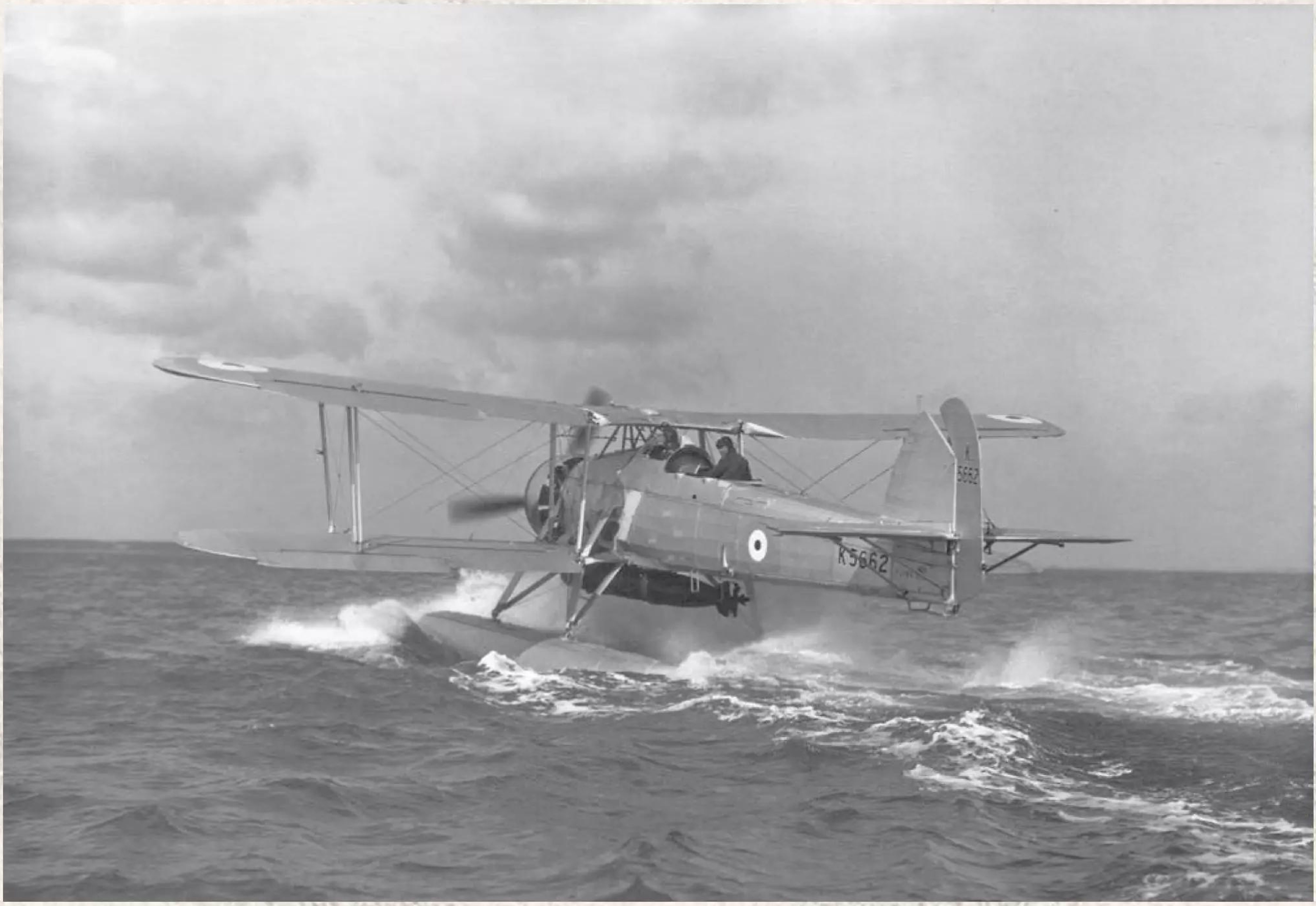
Around this time, Fairey became aware of a requirement by the Greek Navy for a general-purpose aircraft that would be capable of torpedo attack as well as reconnaissance. The company judged that an adaptation of its S.9/30 design would be suitable, and set about building a prototype as a private venture, which was simply known in the company as the 'Greek Machine'. The airframe appeared to be in most respects identical to that of the S.9/30, with a few detail differences, but was ➤



The prototype Fairey TSR II as it was originally rolled out in May 1934, with a two-blade propeller, a Townend ring with bulges over the cylinder heads, and prominent anti-spin strakes on the rear fuselage, and as fitted with float undercarriage operating off the Hamble in November that year. *(Author and Menzies family)*



K4190 as modified in 1935 with a smooth Townend ring and three-blade propeller of production standard. *Author's collection*



The last of three pre-production Swordfish K5662s, complete with floats, taking part in tests on Southampton Water with Fairey test pilot Duncan Menzies in 1936. *(Menzies family)* powered by an air-cooled radial engine. Interestingly, when the S.9/30 appeared, it had a split undercarriage suitable for torpedo carriage. Fairey informed the Admiralty about this aircraft, when progress on the prototype was only few months behind the S.9/30. One story suggests that Sir Richard Fairey told the ‘chiefs of the FAA’ that the S.9/30 was “ten times more expensive to build than the private-venture ‘Greek machine’ … [which] could do everything that the S.9/30 could do”.[1] This is somewhat hard to credit, as the aircraft was virtually identical apart from the engine installation and the former’s ability to carry a torpedo. However, it happened the Admiralty immediately showed interest in the ‘Greek Machine’, with the result that Fairey accelerated work on it, and the private venture type first flew almost a year before the ‘official’ one.

A likely reason for this was a change in doctrine in the Fleet Air Arm. In 1930, the service responded to financial pressures and the constraints placed on it by the Air Ministry by seeking to share its roles across fewer aircraft types. The FAA had previously considered that at least three aircraft types in service at any one time were necessary to cover the roles of torpedo attack, reconnaissance, gunnery spotting, escort of strike/reconnaissance missions, and fleet defence (with either float or wheel undercarriage). A proposal from Fleet Air Arm officers suggested reducing this to two. The torpedo strike and spotter roles were to be combined into a three-seater type, known as a Torpedo-Spotter Reconnaissance aircraft, or TSR. Escort and fleet defence would be provided by a two-seat fighter, with reconnaissance able to be carried out by both types.

This was naturally not without complications. The spotter-reconnaissance was typically a three-seat aircraft, while the specialist torpedo aircraft only required two crew. However, the 1930 decision that 1,500lb was adequate for aerial torpedoes freed up 500lb of weight-carrying requirement, meaning a smaller and lighter aircraft than the M.1/30 contenders could fulfil the specification and still leave scope for a third crew member and his equipment.

This led to yet another new specification, the third in five years for a new torpedo aircraft. The previous requirement, M.1/30, was cancelled along with the spotter-reconnaissance specification S.9/30 and a new, combined and amended requirement issued in the form of S.15/33. This time, the offensive load was reduced to a 1,500lb torpedo or equivalent in bombs, but with a similar performance. Interestingly, the top speed called for in S.15./33 was slightly slower than that specified in M.5/28 fully five years earlier, although the failure of any of the prototypes from the earlier competitions to meet their performance targets might have convinced the Air Ministry that there was no point asking for more. As it happened, the S.15/33 contenders would miss even the modest performance set out in the specification. At this point, the Admiralty was intent on acquiring an aircraft that could do all the tasks required of it more than it was on out-and-out performance while doing them, which often put it in conflict with the Air Ministry, which tended to favour performance over capability.

The ‘Greek Machine’ first flew on 21 March 1933 at Harmondsworth aerodrome, piloted by the company’s chief test pilot Chris Staniland. As completed, it was powered by a 625hp Armstrong Siddeley Panther VI, which appears to have been the engine preferred by the Greek Navy, but within a few months it was replaced by a Bristol Pegasus. On 10 July the revised aircraft first flew with the new engine and wheel spats fitted. From this point, the aircraft was known as

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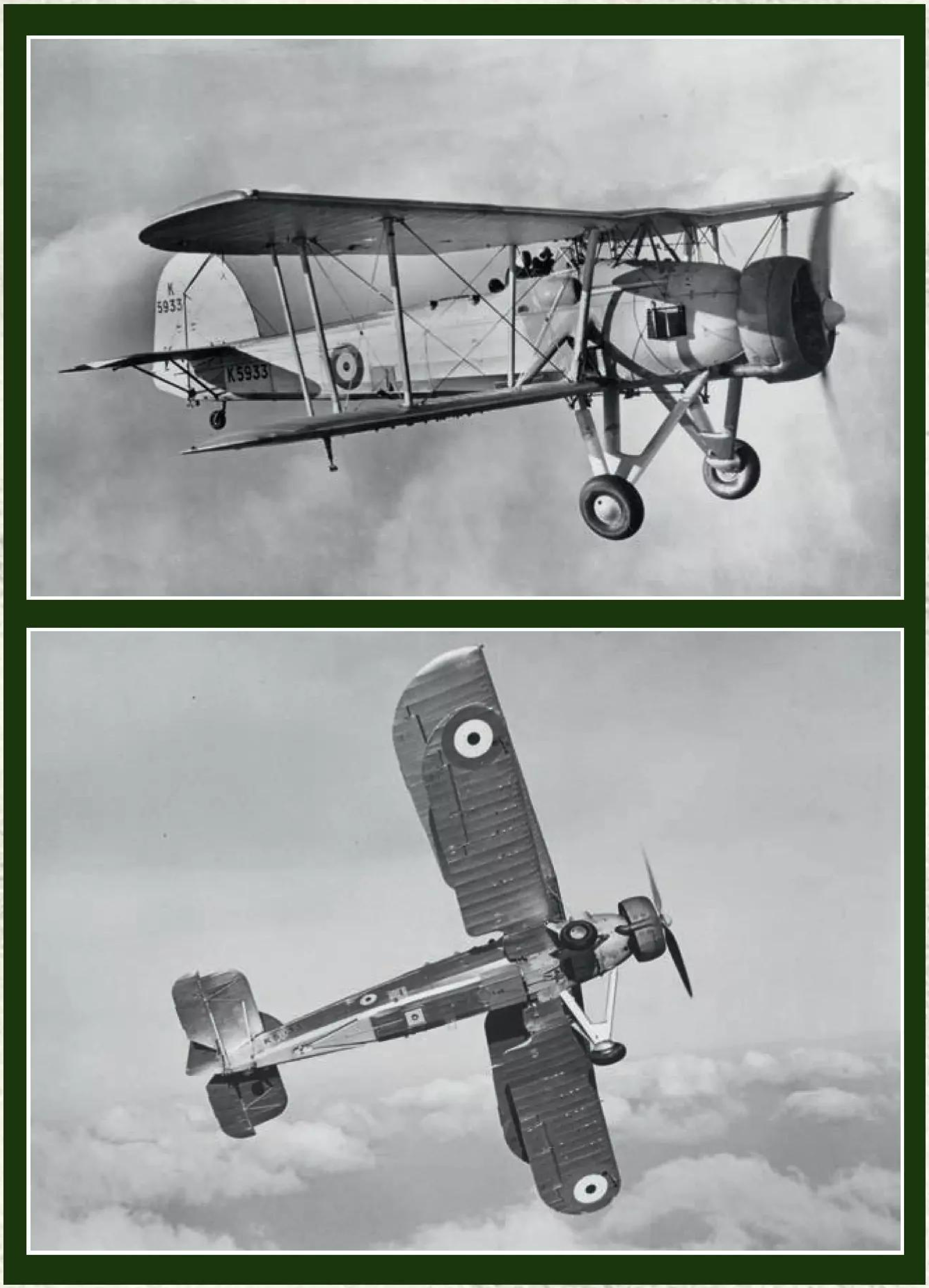
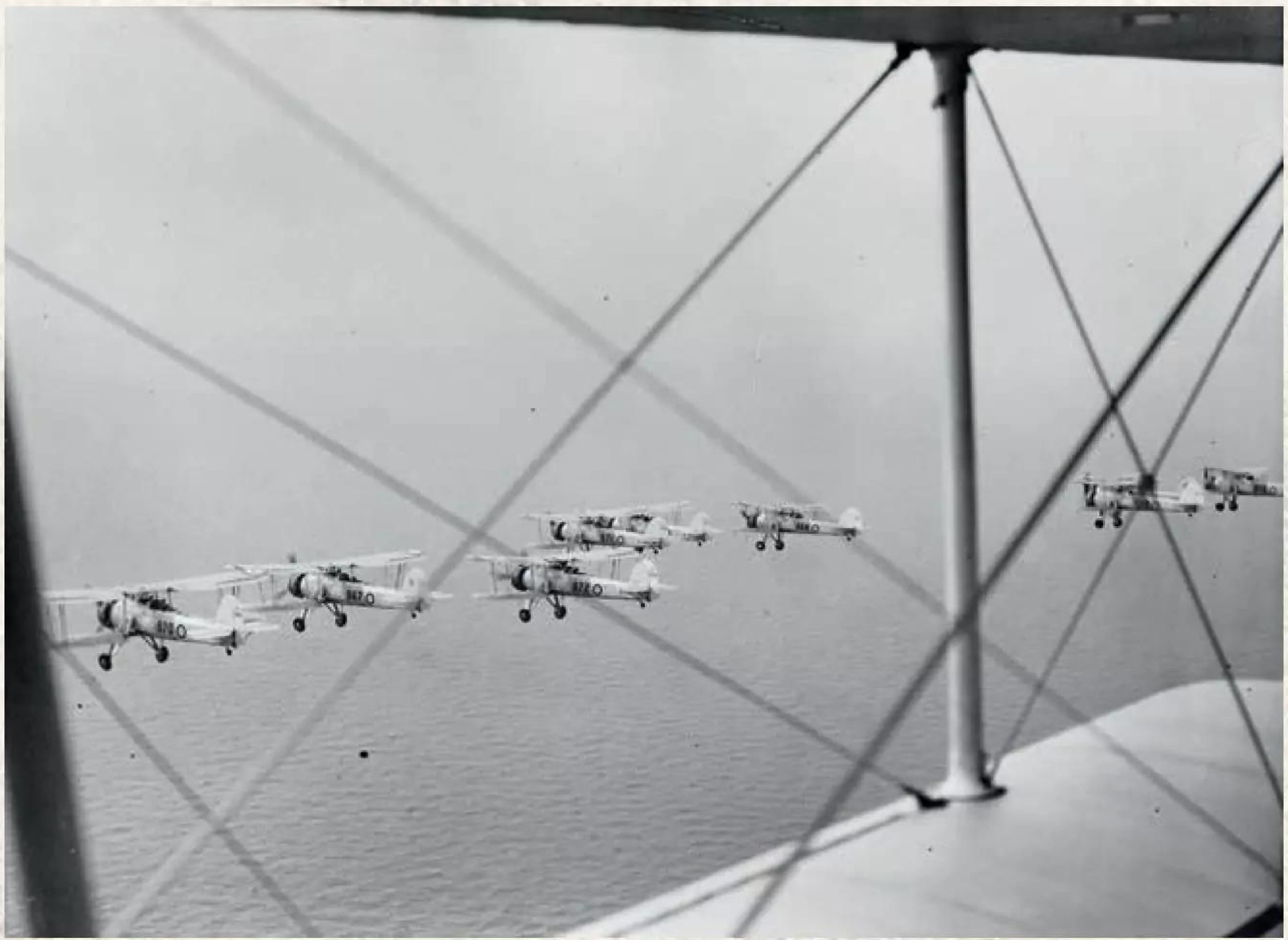


Early production Swordfish K5933 demonstrating the colour scheme early aircraft were delivered in, with silver dope on fabric surfaces, and ‘Cerrux Grey’ on most metal panels. *Author’s collection*

K5932 ‘73’ and other aircraft of 812 Squadron over the assembled ships of the Royal Navy during the 1937 Fleet Review at Spithead, belatedly marking the coronation of King George VI. *Author’s collection*



The first frontline Fleet Air Arm unit to equip with Swordfish was 825 Squadron, of HMS *Glorious*’ air group, indicated by the diagonal yellow band on the rear fuselage, flying in Vics of three. The squadron wore three-digit side numbers from 967 to 981 between July 1936 and May 1939 . *Author’s collection*

the Fairey TSR. Trials continued and were apparently promising, until 11 September, when Staniland made a flight to assess spin performance with the automatic leading-edge slats unlocked. The TSR was extremely stable and it proved difficult to induce a spin. This was not unusual in aircraft of this configuration — the competing Blackburn Shark was also extremely difficult to spin. Unfortunately, when Staniland finally managed to encourage the TSR to enter a spin, the aircraft’s attitude immediately became very flat and the rotation fast, and none of the usual actions to return to controlled flight proved effective. After 12 revolutions, Staniland felt he had no choice but to bail out, which he did safely, but the TSR was destroyed in the resulting crash.

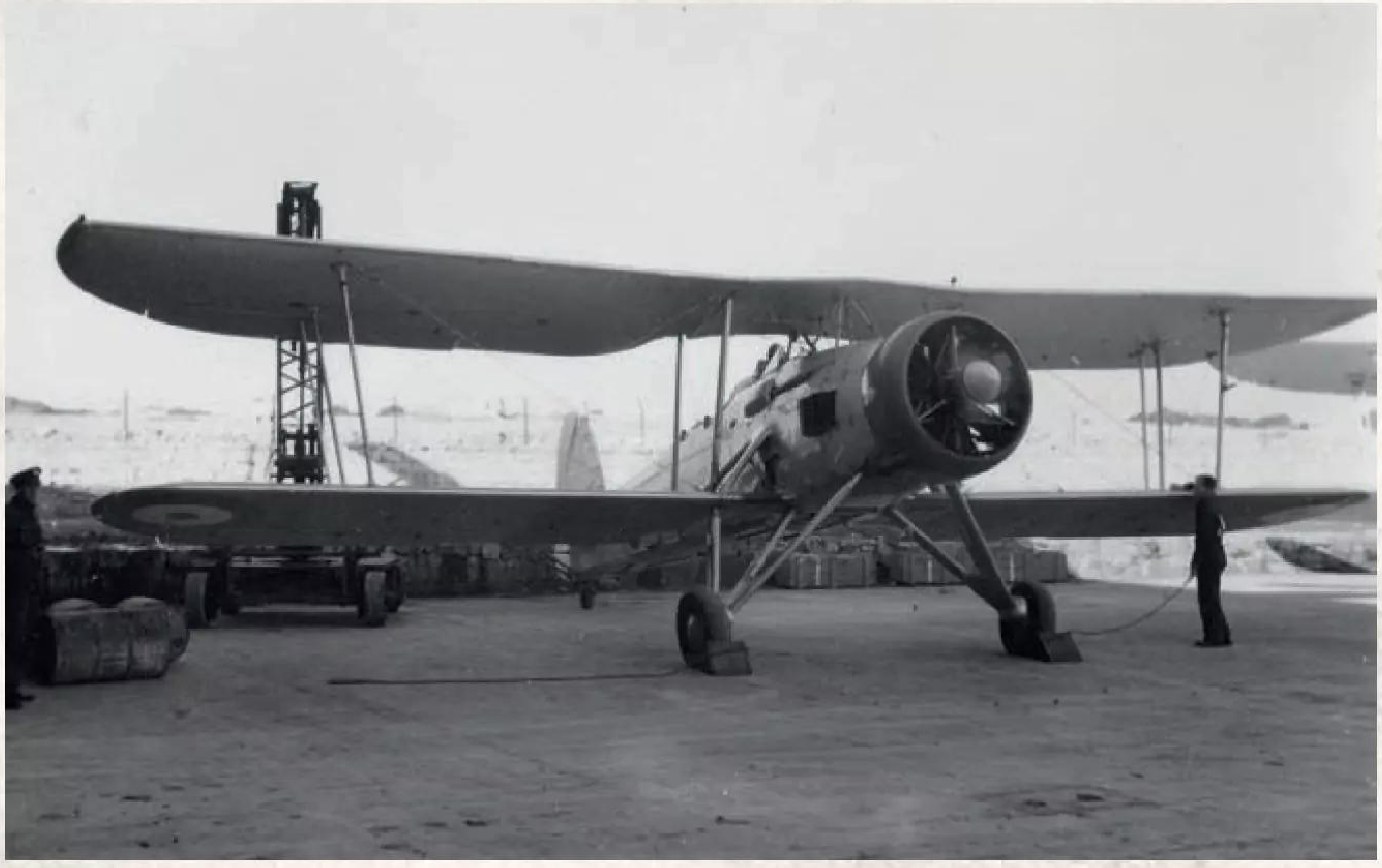
Things looked bleak for Fairey. There had only been one prototype, and there was no second machine under construction to carry on the programme. Meanwhile Blackburn had produced a completely revised version of its M.1/30 design, and its S.15/33 contender based on this design (later to become the Shark) was nearing completion. Gloster had modified its FS.36 design (FS for ‘fleet spotter’) into the TSR.38, and the aircraft had been flying in that form for two months. By the time it would customarily take to produce a second TSR, the Admiralty and Air Ministry would most likely have already made a decision. And before that, changes would have to be made to the design to ensure the irrecoverable flat spin would not recur. What followed demonstrated the company’s determination and belief in its aircraft.

Work was immediately started on a second prototype, with amendments to ensure better response in a spin. These included lengthening the rear fuselage by some four feet, enlarging the vertical tail surfaces, and adding strakes to the rear fuselage to ensure airflow was directed over the rudder during a spin. The wing planform was also adjusted, with the lower wing no longer swept, and the upper wing area and shape altered slightly thanks to the leading edge being squared off at the tip, which also allowed for the anti-stall slats to be lengthened and extended almost to the tip. The Townend ring around the circumference of the engine was of broader chord, and incorporated an exhaust collector ring in the leading edge. This revised design was designated TSR II.

According to H.A. Taylor, “By giving top priority to the project and cutting right across normal works procedures — so that assemblies were made in any convenient part of the factory as the drawings came through — the TSR II, prototype for the Swordfish, was completed and flown in seven months.”[2]

The first flight of the new machine was made on 17 April 1934 — a remarkable turnaround, which effectively kept Fairey in the competition along- side Blackburn and Gloster.

Contractor’s trials were carried out by Fairey until June, when the aircraft was passed to the Aeroplane and Armament Experimental Establishment (A&AEE) for initial tests, by which time it had been allocated the serial K4190. These tests were necessarily brief, as catapult tests at RAE Farnborough and deck-landing trials aboard HMS *Courageous* had to be fitted in. The TSR II returned to Martlesham for more



A Swordfish of 825 Squadron runs up at RAF Hal-Far, Malta in 1936, shortly after the squadron replaced its Fairey IIIFs for service in the Mediterranean Fleet. *Author's collection*

'A' Flight of the Torpedo Training Unit (TTU), based at RAF Gosport for training aircrews using the range in Stokes Bay. These aircraft were from the second production batch. *Author's collection*

K8426 '6' from 'A' Flight TTU, demonstrating an imperfect torpedo drop with a practice projectile, 1938/9. *Author's collection*

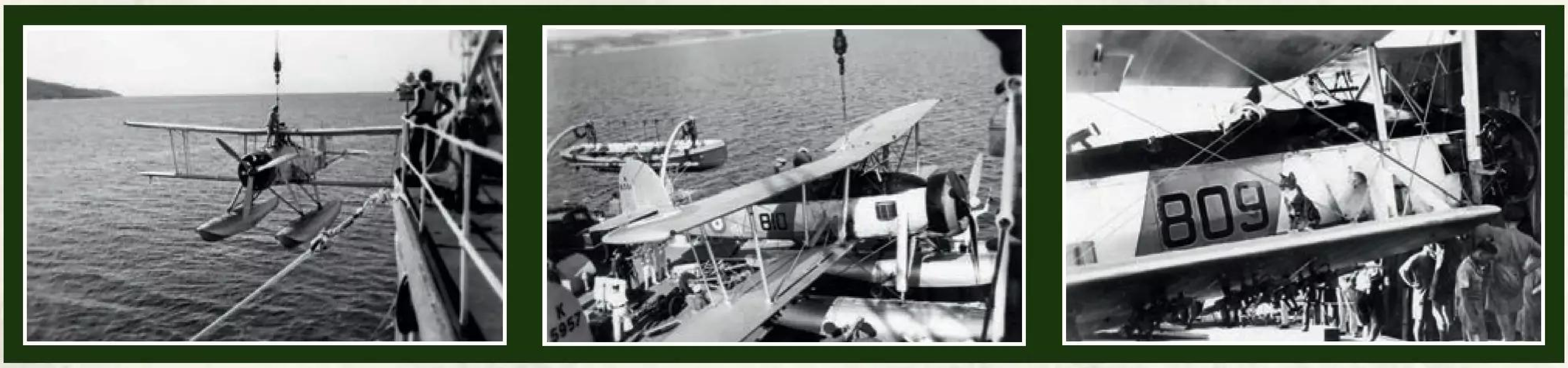
extensive A&AEE trials in August, Flight Lieutenant Duncan Menzies picking up the aircraft from Hayes on 3 August 1934. By now, all three TSR competitors were at Martlesham, and the test pilots there were able to assess them back-to-back.

Other than a few handling niggles, the Fairey showed up well. Fortunately, the changes made to the design after the loss of the first TSR were effective, and recovery from spins could be effected quickly and easily. The aircraft left Martlesham in October 1934 while the Blackburn and Gloster continued testing there, but the A&AEE report was not completed until April 1935. The report must have been well received as an order for three more prototypes and a production batch of 86 aircraft was placed shortly afterwards. To put this in perspective, the Blackburn Shark received an initial production order of just 16 aircraft (and even the second production batch was only for 53 machines). Both the Blackburn and the Fairey had proved superior to the Gloster, which did not proceed beyond prototype stage.

On acceptance by the Air Ministry, the TSR II received the formal name 'Swordfish'. (The naming policy for Fleet Air Arm aircraft at the time was for TSRs to be named after predatory fish, and for fighters to be named after seabirds.) An order for a second, even larger, batch of 104 aircraft was placed in 1935, with 150 more ordered two years later, by which time the Swordfish was the sole torpedo bomber in FAA service.

The first of the three pre-production aircraft, K5660, was completed in December 1935; K5661 and K5662 followed in January 1936. One of the first people to fly these aircraft was Flight Lieutenant Menzies, who had been heavily involved in the A&AEE trials on the three TSR aircraft, but had moved to Fairey Aviation in the meantime. His logbooks show the extent of manufacturers' trials of the first three production-spec Swordfish as they became available over the first few months of 1936 from Great West Aerodrome, joined occasionally by K4190.

Particular attention during this phase was paid to the ailerons, which were light and effective at all speeds but had a tendency to snatch during the stall. The ailerons could be drooped to provide something of the effect of a wing flap, but in reality, this was barely effective and rarely used. General handling was still being addressed, as was lateral and longitudinal stability (the Martlesham tests had indicated some instability in the dive with the centre of gravity near the aft limit). ➤



Three images of Fairey Swordfish floatplanes of HMS *Glorious*' air group October 1937. K5957 '72' of 812 Squadron is craned over the side; K8351 '810' of 823 Squadron is prepared on the quarterdeck, and '809' has its wheel chassis changed for floats, overseen by the ship's cat. *Author's collection*

'Flettner strips' (a projecting strip along the trailing edges of a control surface) were tested on ailerons and elevators in an effort to perfect control. The anti-spin strakes evidently turned out to be unnecessary, and they did not appear on production aircraft.

In March, K5662 was fitted as a floatplane, and company testing moved to Southampton Water. Meanwhile, early production aircraft began to appear in February and undergo testing at Great West before delivery to the service.

Testing on with floats did not proceed as satisfactorily as the version with wheeled undercarriage, and in truth as a floatplane, the Swordfish was never entirely satisfactory. Manoeuvrability at low speed was inadequate, the water rudders never met the turning circle requirement and the floats could take a long time to get up onto the steps, during which time the propeller would be pounded with damaging spray. Even when the aircraft had ridden up onto the steps of the floats, the ride was rough and uncomfortable, and the pilot had to take care that the aircraft was not bounced into the air before it reached flying speed. In the air, handling of the floatplane Swordfish was better, but overall, the aircraft was less satisfactory as a floatplane than as a landplane.

When the first Swordfish were delivered to the Fleet Air Arm in July 1936, its competitor, the Blackburn Shark, had been in service for 18 months. This was not a happy period, as persistent reliability niggles with the Shark's engines and oil system had prevented the FAA from making full use of its new aircraft.

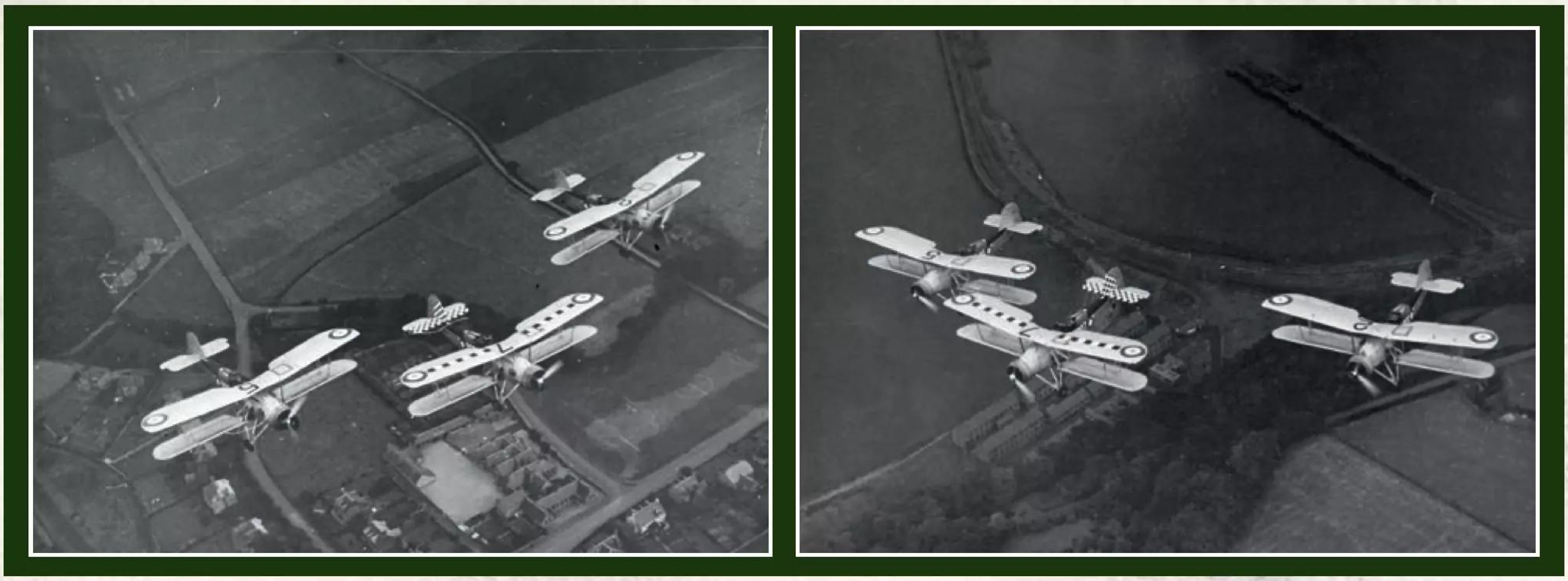
The TSRs were replacing two distinct classes of aircraft, the Fairey IIIF and Seal spotter-reconnaissance, and the Blackburn Baffin torpedo bomber. The first unit to convert to the Swordfish, 825 Naval Air Squadron (NAS), had been a IIIF squadron (the oldest type, and hence most overdue for replacement), while the next two, 811 and 812 NAS, which converted in October and December 1936, had operated the Baffin. In October, 825 Squadron embarked on HMS *Glorious* for service in the Mediterranean, and switched between the carrier, Hal Far on Malta and Dekheila and Aboukir in Egypt for most of the next two years. The exception was a brief return home to take part in the Coronation Review of the fleet at Spithead to mark the ascension of George VI to the throne. Also participating were 811 and 812 Squadrons.

The review itself was affected by poor weather, and mist and cloud made assembling the massive formation difficult. The aircraft were meant to fly past the Royal Yacht in squadron formation, diving to salute the Royal Yacht, before moving into wing formation and once again passing the warships. Because of the weather, the squadron formation and salute were dispensed with. The poor visibility hampered proceedings, but over a million people still turned out to see the review, and the sight of the Fleet Air Arm was unquestionably impressive. The next time a full, public fleet review would take place was in 1953; the 1937 event marked both the high point of the pre-war, all-biplane Fleet Air Arm and the beginning of its formation into a wartime service.

Although three of the squadrons taking part that day were flying Sharks, within two months they, too, would be operating Swordfish. From September 1937, the Swordfish was the sole TSR type in operation with the FAA. With the Albacore still on the drawing board at that time, the Swordfish was set to be the warhorse on which the FAA's strike force would train and organise for war against a powerful, well-equipped peer nation, evolving from the colonial police force it had been in the 1920s.

When the Swordfish was developed, and the main production orders placed, there was little immediate prospect of a global war, despite the increased tensions resulting from the rise of Nazi Germany. The brief panic over a possible British retaliation to the Italian invasion of Ethiopia in 1935/6 had not changed policy with regard to rearmament, and the usual peacetime process of a new specification every few years to replace existing types with newer ones continued. It was commonplace for a new specification to be issued more or less as the previous type was coming into service, and this was no exception with the Swordfish. Specification M.7/36 was raised in 1936, which led to the Fairey Albacore, the type that was intended to replace the Swordfish and Shark (although the Shark would be withdrawn from frontline use in 1937 following persistent problems with its oil system). The Albacore was expected to be a short-lived, interim design, given the rapid advances in aviation technology, so yet another specification, S.24/37, was raised the following year, calling for a much more advanced TSR with considerably better performance. Within two years of that specification, it was expected that the Swordfish would have been replaced by the Albacore, and by 1941, the S.24/37 monoplane would be coming into service.

This expectation did not seriously change until 1939, when the possibility of war became a near-inevitability. It was not until August that the Admiralty took serious steps to build up production, though many of the Admiralty's requirements were resisted by the Air Ministry. The last order for the Swordfish was due to be completed in November that year, with the Albacore taking over the following month, reaching a production level of 20 TSR aircraft a month by July 1940. This meant a dip in deliveries to the FAA at the worst possible time — 26 aircraft (Swordfish) in November 1939, falling to just two aircraft (Albacores) in December, deliveries failing to reach



A Vic of Swordfish from 822 NAS, HMS *Furious*, demonstrating the colourful markings that were typical of the Fleet Air Arm in the late 1930s, including a black upper deck and chequered pattern on the upper wing and tail surfaces of '907', indicating a flight-leader's aircraft. Fuselage bands were red. *Author's collection*

previous levels for eight months. This would have been manageable in peacetime, but was totally inadequate for a war which it was expected might start in October. (As it turned out, war would be declared a month earlier than that.) The Admiralty assessed that it would need 50 TSRs a month to keep up with wartime loss rates. If wartime rates were to be achieved, a rate of 35 aircraft a month would have to be attained while peace continued to hold. The head of Air Branch at the Admiralty wrote in a memorandum of 28 August 1939, "If factory extensions are necessary, it might be worth taking steps to increase the production of Albacores as it is understood this machine is preferred to the Swordfish." The only way to maintain the level of aircraft needed was to keep the Swordfish in production while the Albacore began. This would mean either enlarging the Fairey factory at Hayes, or finding production capacity somewhere else.

Duly, an order was discussed with Blackburn to build 400 Albacores, with Admiralty assistance given to the company to set up a factory at Sherburn in Elmet, near Leeds, where Blackburn had a presence with their flying school, with the added advantage that it was close to Blackburn's Olympia works. The factory buildings, to Ministry of Aircraft production designs, were commissioned quickly, and arrangements made for around 60% of the work to be sub-contracted to local companies.

However, when war broke out in September, the production arrangements were still inadequate to meet the Fleet Air Arm's needs. With agreement from Blackburn and support from Fairey, the Admiralty sought permission from the Treasury to switch the proposed order for Albacores to Swordfish:

"The performance of the Swordfish is substantially inferior to that of the Albacore in several respects, but the Admiralty have come to the conclusion these disadvantages would be outweighed by the prospective acceleration in output to meet the anticipated deficiencies of the Fleet Air Arm in this important type of aircraft."

At this point, the Admiralty thought it would begin to receive the Albacore replacement, the S.24/37 Barracuda, from March 1941 — in fact, for various reasons, deliveries of the later type would not begin until late 1942.

The crucial advantage of Blackburn building the Swordfish would be that most of the existing jigs and tools for the Hayes production line could be transferred to Sherburn, drastically short-cutting the time Blackburn would need to tool up. If Blackburn were to build Albacores in parallel with Fairey, it would mean starting from scratch. The Fleet Air Arm gambled that receiving an older aircraft sooner would be better than a newer one later. It was this decision that secured the future of the aircraft. Without it, the Swordfish could not conceivably have continued in frontline roles much after 1941. As it was, the Swordfish served the Royal Navy until the end of the war and beyond.

At the outbreak of war, 13 frontline squadrons were equipped with the Swordfish. By 1938, all of the 'legacy' types — IIIFs, Seals and Baffins — had been replaced, as well as Sharks of 810, 820, 821 and 822 Squadrons. The Admiralty considered, however, that "The types of aircraft in service with the Fleet Air Arm were obsolete."[3] If anything, the situation with carriers was worse; the RN had six that were suitable for frontline operations, none of which was armoured, and only one (*Ark Royal*) was truly modern. Newer carriers were under construction, all of which had substantial armour protection, the first (HMS *Illustrious*) due to commission in April 1940, and the second (*Formidable*) in October. ■

Fleet Air Arm Legends
FAIREY SWORDFISH
2
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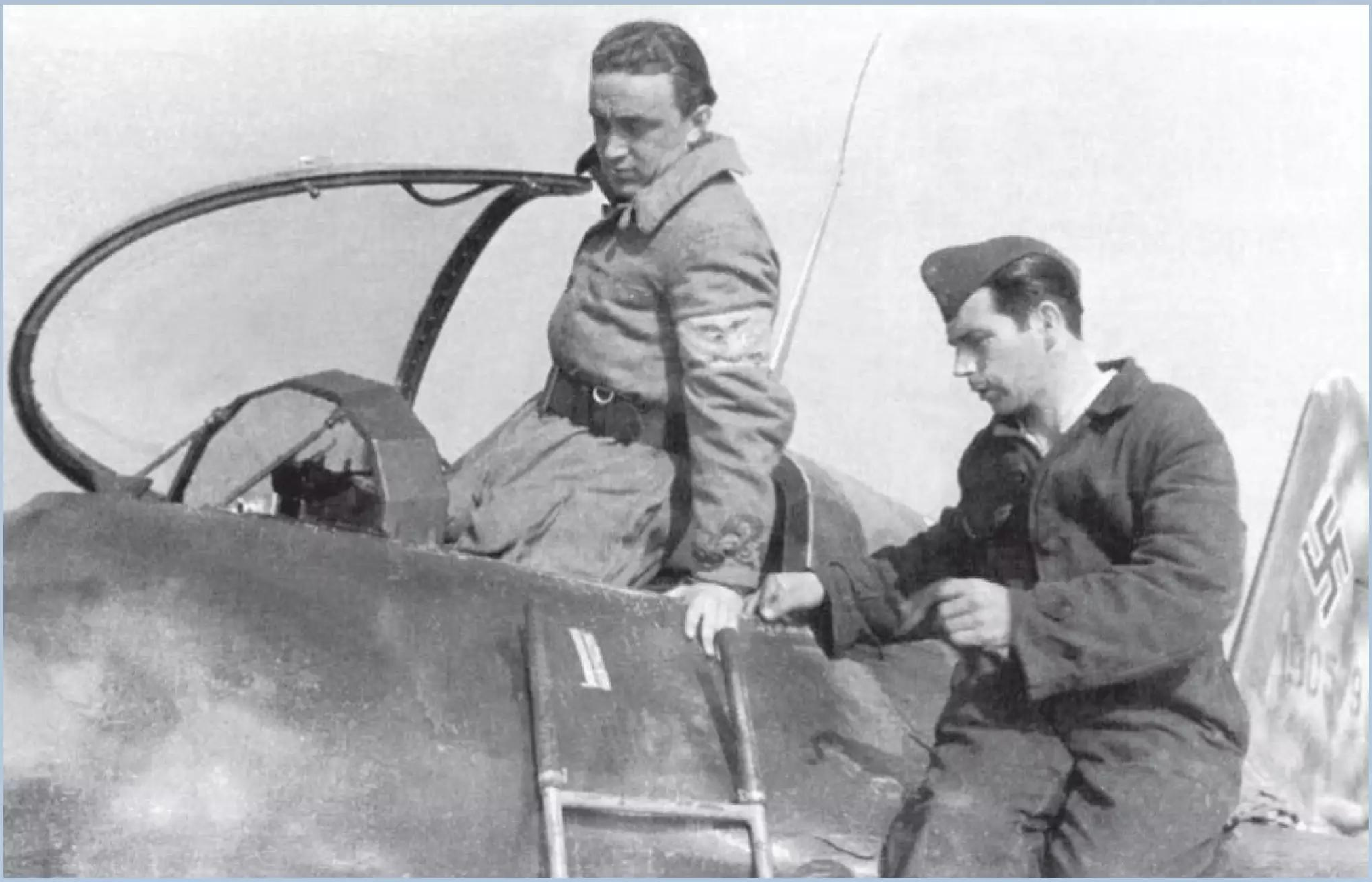
[1] Ian M. Philpott, The Royal Air Force: Re-Armament 1930 to 1939, Pen & Sword, 2006, p.434

[2] H.A. Taylor, Fairey Aircraft since 1915, Putnam & Co 1974, p.18

[3] Requirements for aircraft carriers, Memorandum by Director of Plans, 24 January 1940, ADM 1/1197

The last rocket fighter victory of the Second World War

As the Allies advanced into Germany, Bomber Command continued to focus on targeting German rail infrastructure. On April 10, 1945, the marshalling yards at Engelsdorf and Mochau, near Leipzig, were the next targets. The mission was nearly routine; however, one of the defenders that the bombers encountered upon arrival was anything but ordinary.



Veteran Messerschmitt Me 163 B Komet rocket fighter pilot Leutnant Friedrich 'Fritz' Kelb of I./JG 400 in the cockpit of his aircraft. Kelb was sent up to attack the Allied bomber formation targeting rail yards near Leipzig on April 10, 1945, using a new weapon over which he had only indirect control. The SG 500 Jägerfaust was fitted in the aircraft's wings and triggered automatically by a daylight sensor.

It was planned that two waves would strike the rail yards – one during the early evening and one that night.

In the first wave were 134 Lancaster bombers – 110 from 6 (RCAF) Group's 419, 424, 427, 428, 429, 431, 433 and 434 Squadrons and another 24 from 8 (Pathfinder) Group – plus 90 Halifaxes from 408, 415, 420, 425, 426 and 432 Squadrons and six Mosquitos of 105 Squadron.

Having taken off from their bases in England between about 2.30pm and 3pm, the bombers linked up with their escort, RAF Mustang IIIs, and reached their target by about 6pm. The skies were blue with patchy cloud.

In the meantime, one Halifax from 408 Squadron became lost and turned for home, while another four Halifaxes and two Lancasters suffered mechanical trouble and went back to base early, running on three engines.

There was heavy flak as the bombers prepared to release their loads at between 15,500ft and 19,000ft, and several aircraft were hit – including Lancaster I PB903, BM-F, of 433 Squadron, flown by Flying Officer Robert Grisdale. He feathered the starboard inner engine after it took damage.

A 425 Squadron Halifax had a hole measuring 2sq ft blasted through the wireless operator's compartment, wrecking the oxygen system. Then the Mosquitos dropped their target indicator flares.

An air gunner with 433 Squadron, Cameron Clare Campbell, wrote in his diary: "This was a good raid but we were towards the rear of the formation and took a dreadful pounding from slipstreams all the way to the target.

"There was heavy predicted flak close to the target. With predicted flak, the Germans would fire a burst and from observing the blast could make a correction on the next shot which would be closer, then make a correction on the second burst and usually the third burst had your number on it.

"The secret was to change your height or heading after the first blast. Just as we were about to drop our bombs, I heard Chris ask the bomb-aimer who was flying F Freddy because he was on fire. Just as Plaskett answered him telling him it was Grisdale's crew, the bombs and the plane blew up. I never saw the explosion as it was slightly ahead of us and to the right but we felt the blast and saw the debris as we passed."

According to the official RCAF report: "This Lancaster was hit by flak, the starboard inner was seen to be feathered. Then a small explosion was seen, the aircraft flipped onto its back and spiralled to the ground. No parachutes were seen."

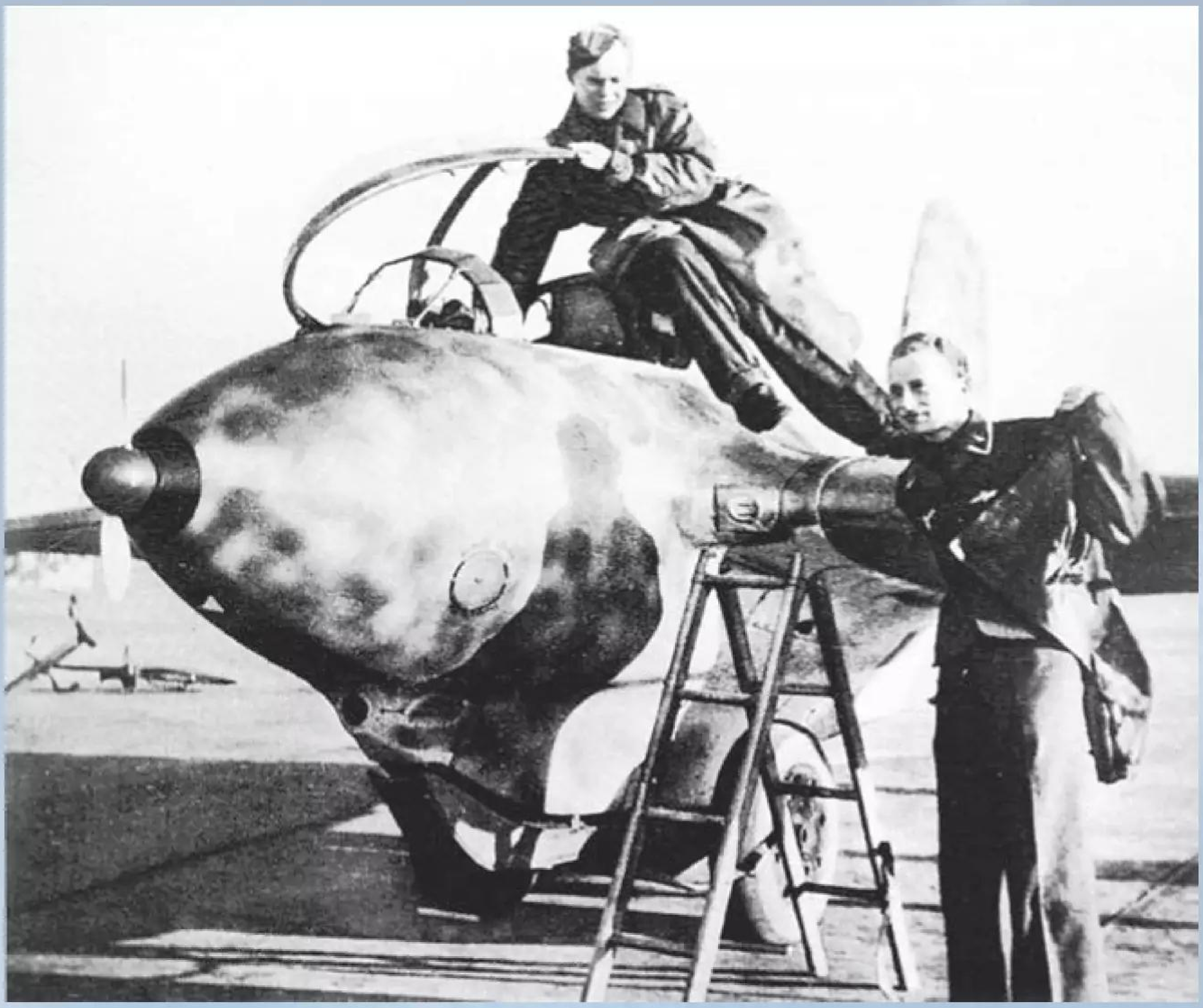
At this point several crews saw small dark shapes flitting among their aircraft and were quick to identify them as Messerschmitt Me 163 B-1 Komet rocket-propelled point defence interceptors.

The pilot of 415 Squadron Halifax VII RG447 'S', Flying Officer R Jupp, spotted an enemy fighter at 6.02pm at 16,500ft, 4500ft off the port bow. The Halifax's mid upper gunner told the Jupp: "Corkscrew starboard" and opened fire with the Me 163 some 2400ft away. The rear gunner joined in at 2100ft and the Me 163 reportedly broke away.

At around the same time, 6.02pm, the crew of 425 Squadron Halifax NP937 'T' saw a Me 163 attacking a Lancaster bomber. They reported seeing flames coming from the Lanc's rear turret and no combat manoeuvres being undertaken by the bomber. NP937's mid-upper gunner fired at the Me 163 and reportedly saw it stall, roll onto its back and go into a steep dive.

That Lancaster was ME315 'LQ- K' of 405 Squadron – a Lancaster III. The pilot was Squadron Leader C H Mussels. The official report on what happened stated: "In the target area, immediately following release of target indicators, Lancaster aircraft 'K' ME315 was attacked by an enemy fighter Me 163. The attacking aircraft approached from the rear and above, and with one burst completely shot away the rear turret, rudder and elevator.

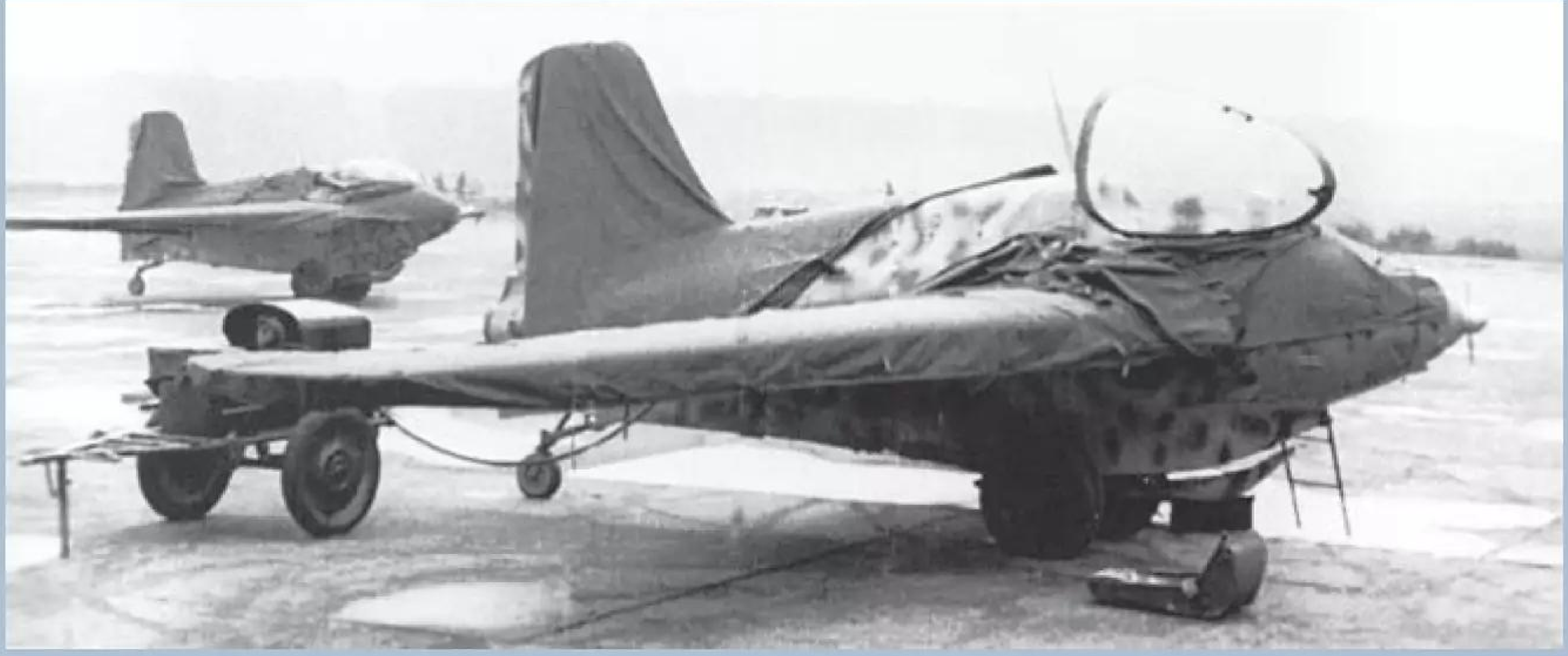
Lancasters flying in large formation during daylight was a rare sight for most of the war – but the attack on railway marshalling yards near Leipzing on April 10 took place just after 6pm. Sunset would have been at around 7.45pm. This switch to daylight bombing made the Allied aircraft a viable target for the Me 163 point defence interceptors of I./JG 400.



The small size and unusual shape of the Me 163 B-1 rocket fighter are evident in this photo showing 2./JG 400's Unteroffizier Rolf Glogner, pictured right, and his machine. Glogner proved that the Me 163 could be effective in the right circumstances by shooting down a de Havilland Mosquito on March 16, 1945. After the disbandment of JG 400, he served with Leutnant Kelb in JG 7 on the Eastern Front flying Me 262s.

"Damage was also caused to the H2S set and mid-upper turret. The rear gunner, Flight Lieutenant Mellstrum, was in his turret when the attack commenced and is believed killed. This officer is missing, no further information available.

"A number of Mustangs who were acting as fighter escort moved in closer to the disabled aircraft and covered it until it reached the front lines. The pilot, due to the fact that he had only partial control of the aircraft, ordered the crew, except for the ➤



This still from a propaganda film shot between August 21 and September 9, 1944, shows Me 163s on the apron at I./JG 400's base at Brandis airfield, near Leipzig.

Lancasters of 405 Squadron, like this one, were pathfinders for the main bomber force on April 10. During the attack, two bombers were lost but the only 405 Squadron machine to suffer heavy combat damage and remain airborne, Lancaster III ME315 'LQ-K', made it home, albeit without its tail gunner. Several witnesses saw ME315's tail section being hit by a Me 163.

A I./JG 400 Me 163 B under full rocket power over Brandis, near Leipzig, in 1944. The unit became operational at the airfield in July 1944 and remained there until its dissolution a fortnight before the war's end.

mid-upper gunner, to bale out over RAF station Woodbridge.

"Had not the mid-upper gunner been injured the whole crew would have baled out. The pilot was successful in making a reasonable landing at RAF station Woodbridge. All members of this crew, with the exception of the rear gunner, are back at this unit."

One of the RAF Mustang pilots, Flying Officer Johnny 'Slops' Haslope of 165 Squadron, claimed to have destroyed the Me 163 during the attack. His report stated: "I was flying as Green 1 when at approx. 6.05pm I noticed a bomber begin to smoke and something appear to fly off it. This resolved itself into a Me 163 which climbed vertically at great speed.

"I reported the aircraft and dropped my overload tanks and gave chase at full throttle. The Me 163 turned towards me and I had a shot at him in a right-hand turn, range about 900 yards and 30 degrees defection, but observed no strikes.

"The Me 163 then spiralled into a vertical dive which I followed, firing several bursts of about 2-3 seconds observing strikes on four occasions on the wing roots and several small pieces came off.

"These strikes were observed by Flying Officer Rae flying Green 2, Flying Officer Lewin, Green 3, and Flight Lieutenant Kelly 64 Squadron. I overshot rapidly at 3000ft and had to pull up to avoid collision, wrinkling the wings as I did so.

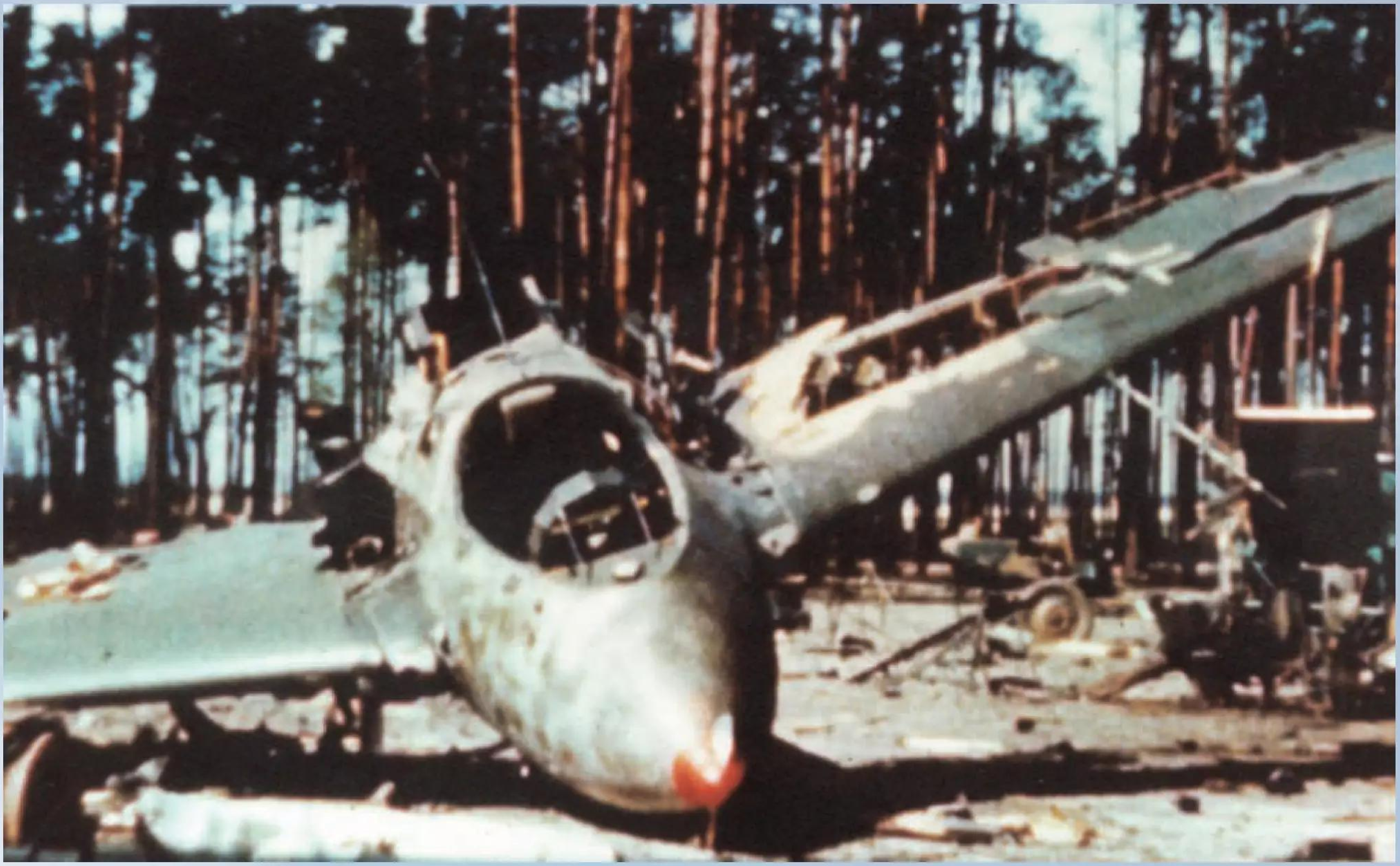
"The Me 163 continued on down and was observed by Squadron Leader Potocki of 315 Squadron and Flying Officer Wacnik of 306 Squadron to hit the ground and explode near an airfield believed to be either Brandis or Manstorf.

"I turned away from the aerodrome and climbed back with Green 2 to rejoin my squadron, followed by 40mm flak from the aerodrome."

It is believed that his Mustang III, KH557 SK-Z, was so damaged by his power dive in following the German aircraft that it never flew again.

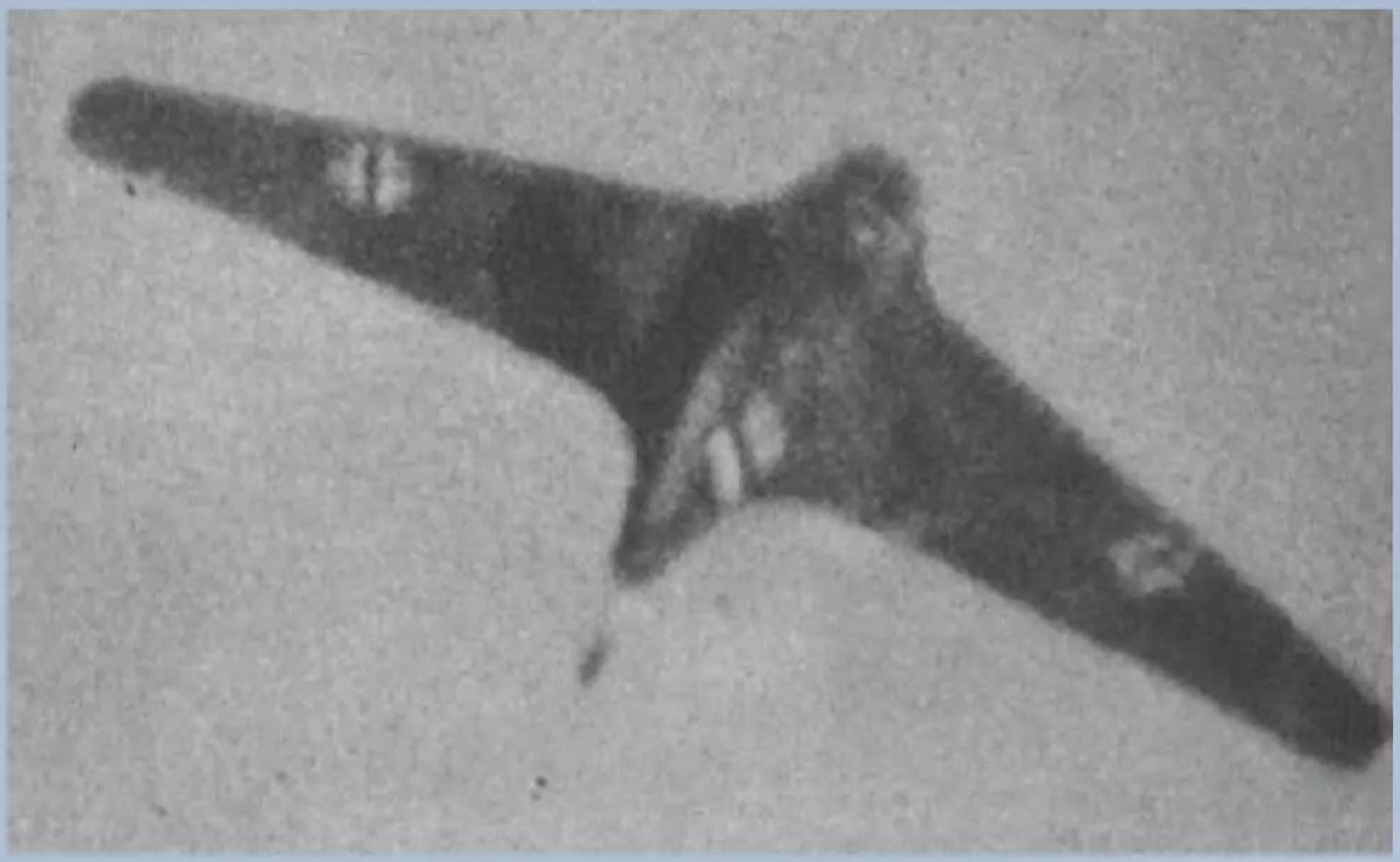
Precise records are lacking but it is believed that three Me 163 B-1s from 1./JG 400 had been sent up to attack the bombers, one of them flown by Lt Friedrich 'Fritz' Kelb of 1/JG 400. He took off from Brandis airfield near Leipzig with the express purpose of field-testing a new weapon. His aircraft was one of three Me 163s to have been equipped with the SG 500 Jägerfaust weapon and was the only one to see action. This was also the last time that Me 163s would see action. ➤

An Avro Lancaster bomber belonging to 433 Squadron. The Canadian unit was based at RAF Skipton-on-Swale in North Yorkshire and flew Handley Page Halifaxes for over a year before re-equipping with Lancasters for the last three months of the war. On April 10, 433 Squadron's Lancaster I PB903, BM-F, flown by Flying Officer Robert Grisdale was shot down over the unit's rail yard target.



The wreckage of a Me 163 modified to fire the 50mm SG 500 weapon. The only visible evidence of this is on the machine's port wing. A series of small black holes runs in a straight line through the centre of the white Balkenkreuz from front to back. With the weapon installed, the tips of four metal tubes would have been visible protruding from the holes. When the SG 500 was fired, the tubes were ejected from the bottom of the wing, while the projectile shot upwards, leaving just the holes, four in each wing.

This low quality shot purportedly shows the underside of a Me 163 wing fitted with SG 500 firing gear. The white block with the vertical row of four holes in it gives more visible evidence of the positioning of the unusual weapon.



Gun camera footage of a Me 163 in flight and under attack. The distinctive 'bat wing' shape was enough to strike fear into the hearts of bomber crews wherever it appeared. Though the type is believed to have been responsible for destroying only 16 Allied aircraft, 12 of them were four-engined bombers.

The SG 500 was designed and patented in 1944 by Oberleutnant Gustav Korff and consisted of a number of rifled steel tubes, each loaded with a single projectile and mounted vertically in the carrier aircraft.

The single shot tubes were linked to an optical sensor mounted on the upper portion of the carrier aircraft which when it sensed the substantial difference in light caused by flying underneath a bomber, into its shadow, fired the tubes automatically.

The tubes themselves were ejected beneath the aircraft as the projectiles flew upwards, cancelling out any hazardous recoil and simply leaving a series of holes in the carrier aircraft. A 20mm version of the weapon was tested on a Fw 190 before the production 50mm version was built for the Me 163.

On the Me 163, four tubes were fitted to each wing, with the optical sensor being installed in the port wing where there was already a suitable access panel.

Signals officer with 2./JG 400, Feldwebel Hans Hoever, saw what happened when Kelb took the weapon into combat: "I watched Kelb attack a formation of about 150 Lancasters that were bombing Leipzig and the city's outskirts on April 10. I had just finished my shift and was standing on the observation tower of the fighter control command post next to the Würzburg radar when I heard over the loudspeaker that Leutnant Kelb was about to take off with his special aircraft.

"I heard the rocket motor and saw Kelb climb above the trees at the end of the runway south of where I was standing. I followed him with the aid of the long-range flak telescope and saw him head towards the lead aircraft of the bomber formation which was flying at a height of about 8000m.

"I thought he wanted to ram it but just at the moment he passed about 100m below the aircraft, the bomber exploded in a cloud of smoke and flames. I had never before seen a bomber so easily destroyed as that attack by Leutnant Kelb.

"Just after the bomber exploded I noticed that the escort fighters had spotted Kelb. My first thought was that he had enough fuel left, at least enough for 15 seconds, to reignite his engine. I was pleased to see the motor spring to life just as the fighters swarmed down to attack him and Kelb shoot through them to a height 2000m above them.

North American Mustang IIIs of 315 Squadron in Europe in the spring of 1945. The unit's Squadron Leader Wladyslaw Potocki witnessed a Me 163 attacked by Flying Officer Johnny 'Slops' Haslope, of 165 Squadron, hit the ground and explode on April 10, 1945.

Flight Lieutenant Melborn Leslie Mellstrum was the tail gunner in 405 Squadron Lancaster III ME315 'LQ-K' when it suffered severe damage during a Me 163 attack. His turret torn open, his body fell to the ground. It was recovered by the Germans and buried three days later by a party of British PoWs.

"My telescope allowed me to follow the ensuing fight. With his fuel spent, Kelb turned and dived past a fighter that was close to him with such a speed that the fighter was not aware of what had happened."

A German report on the use of the Jägerfaust on April 10, made on April 12, stated: "The first and also the last operational trial of the Jägerfaust was made over Leipzig on April 10, 1945. At about 6pm a strong formation of enemy bombers appeared over the city. A Me 163 B with 'vertical armament' went into action.

"The aircraft came unheeded below the enemy machines. The armament was immediately discharged. A bomber at once fell out of the sky like a burning torch, none of the crew being able to make their escape. Two other aircraft were so badly damaged that they also crashed after flying over out airfield. Our aircraft was able to draw away still unobserved by the enemy, and was only located and attacked by Mustang and Thunderbolt fighters when it had arrived back over our airfield.

"The anti-aircraft defences were able to keep the enemy aircraft at a distance while a smooth landing was made with no damage to our aircraft. These were the last successes obtained with the Me 163 B."

Aftermath

Kelb was killed in action less than three weeks later, on April 30. After the disbandment of JG 400, he joined I./JG 7 flying the Me 262. During a fighter sweep he was apparently attacked by a pair of fighters from the 358th Fighter Group flown by Lieutenant Joseph Richlitzky and Captain James H Hall, each claiming a Me 262 damaged. Another version of events suggests that he was hit by flak near the Focke-Wulf facility at Cottbus.

Every crewman aboard Grisdale's Lancaster I PB903, BM-F, was killed and their remains were buried in Berlin War Cemetery. Another bomber went down during the same raid, Halifax BIII NA185, 6U-B, which was reportedly hit by bombs from another aircraft. All of its crew were killed too.

Nothing of the tail gunner of Lancaster III ME315, LQ-K, of 405 Squadron, Flight Lieutenant Melborn Leslie Mellstrum, remained in his turret when the crippled aircraft arrived at Woodbridge, but he had not disappeared completely as a surprising number of men did during the war.

A British prisoner of war, Gunner Robert David Williams of the 11th (HAC) Regiment, Royal Horse Artillery, reported on June 24, 1945 that he had been at Stalag IVG at Engelsdorf during April 1945, when a chaplain asked him to join a funeral service for two British servicemen – one of them another PoW killed during an air raid, and the other an airman whose body had been found by the Germans.

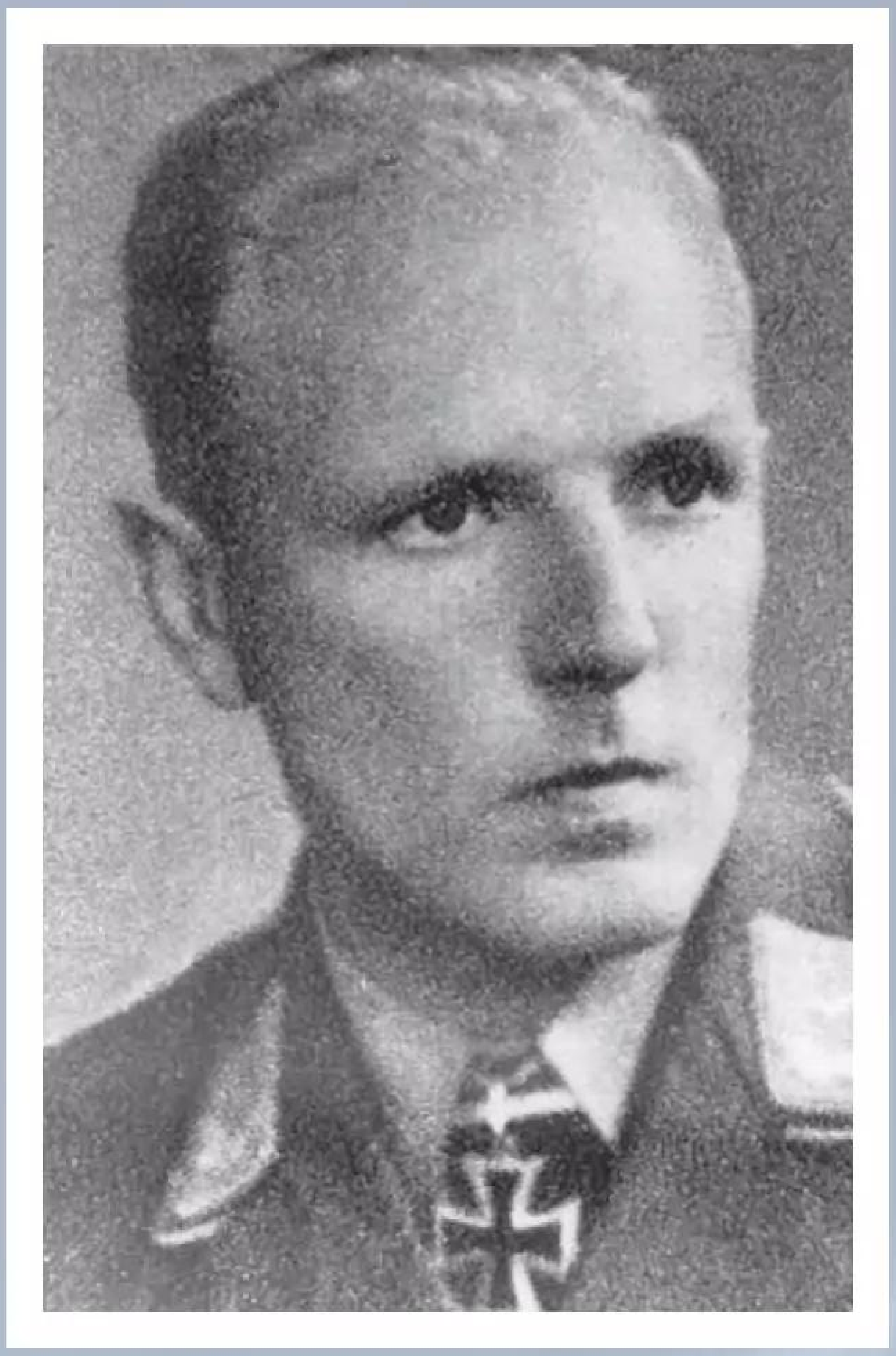
After he was liberated, he told the British military authorities: "The burial took place in the evening of April 13 at the cemetery of the Luthren Evangelical Church at Engelsdorf about 10km east of Leipzig.

"The bearers and all the burial party were from Lager 29. The men were under the command of Lance Sergeant Frank Cole. They slow-marched from outside the mortuary to the grave. The coffins were draped with the Union Flag. They were lowered into the grave simultaneously by two different parties.

"After the service the men saluted. The Germans were unable to supply the usual firing party as the Americans were just outside Leipzig and the guns could be heard constantly. We ourselves were evacuated by the Germans at 3am the following day."

Williams asked after the airman's identity following the service and several hours later was told that it was Melborn Leslie Mellstrum.

To this day, it is unclear precisely which aircraft Kelb hit with his novel upwards firing weapon. If he was alone, then it would make sense that Lancaster ME315 was badly damaged by him. If there were indeed two other Me 163s with him, the flak hit on Lancaster PB903, Grisdale's machine, may in fact have been the result of his SG 500 – the effects of which would have been very like a flak strike.



Veteran assault glider pilot Hauptmann Wilhelm Fulda was the commander of I./JG 400 on April 10, 1945. The unit was disbanded just nine days later.

The machine that blew Mellstrum from his turret and was then followed to its destruction by Haslope's Mustang might have been one of Kelb's comrades, rather than Kelb himself.

It is a mystery unlikely to ever be satisfactorily resolved. ■

For more, see:
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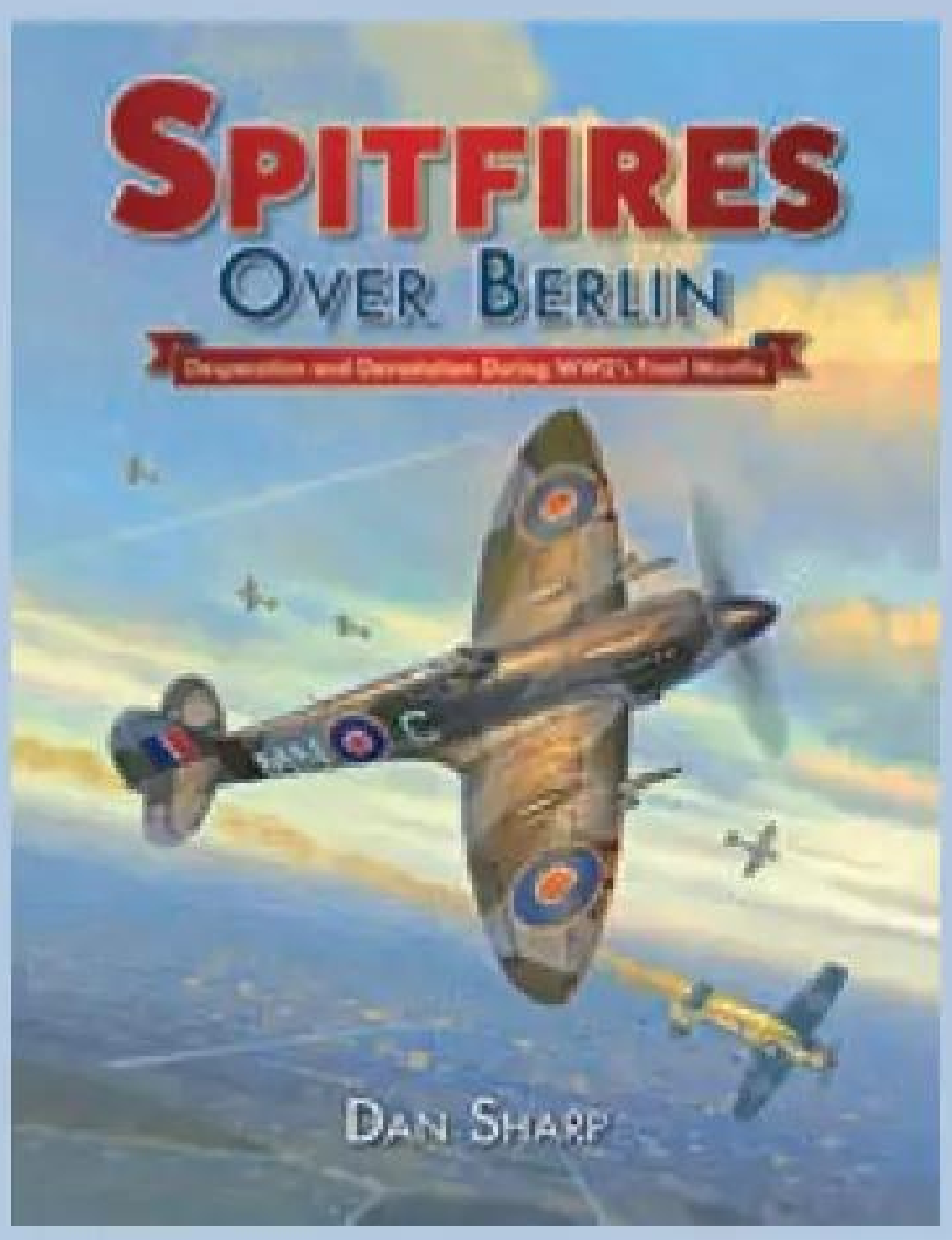

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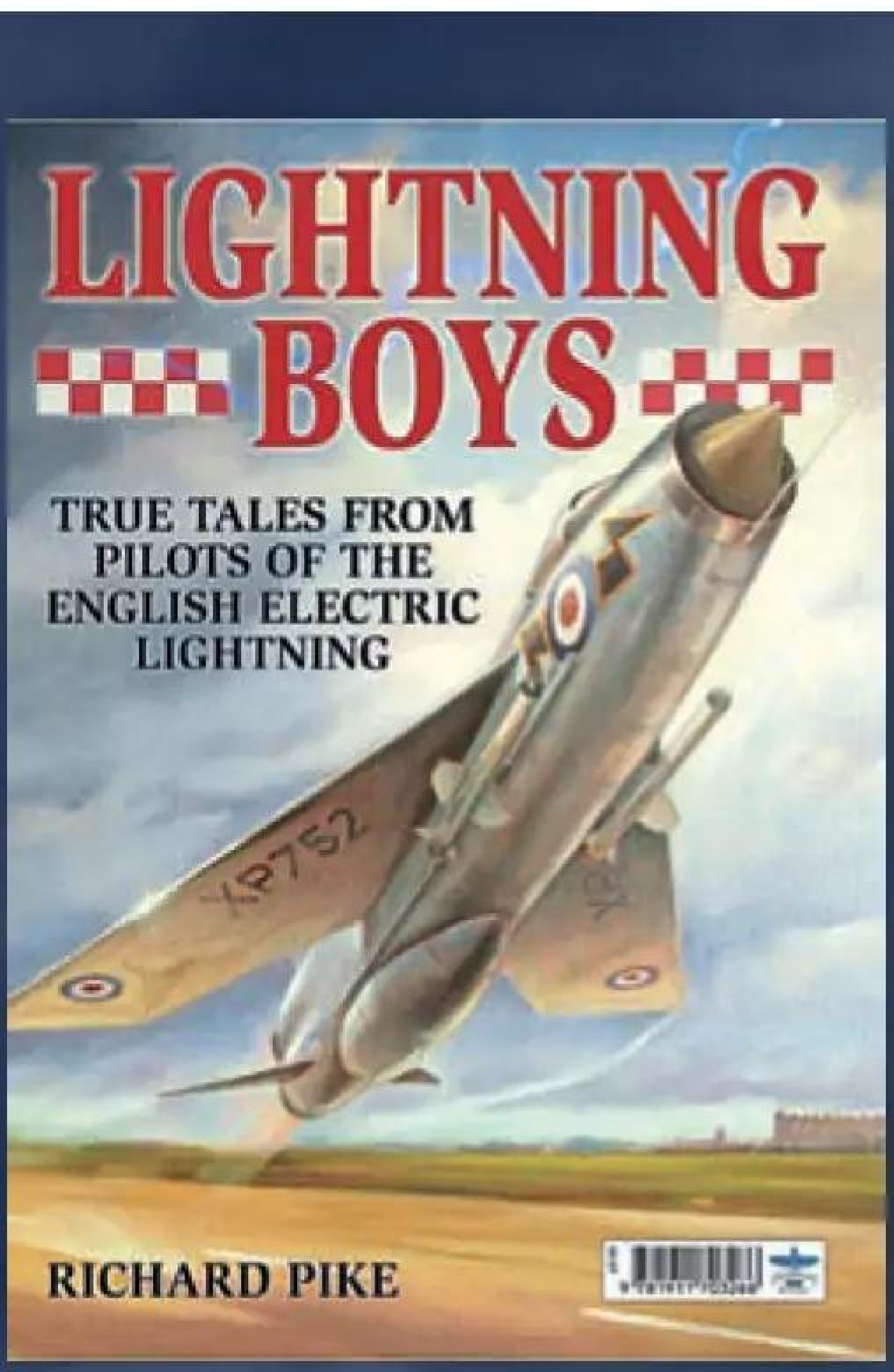
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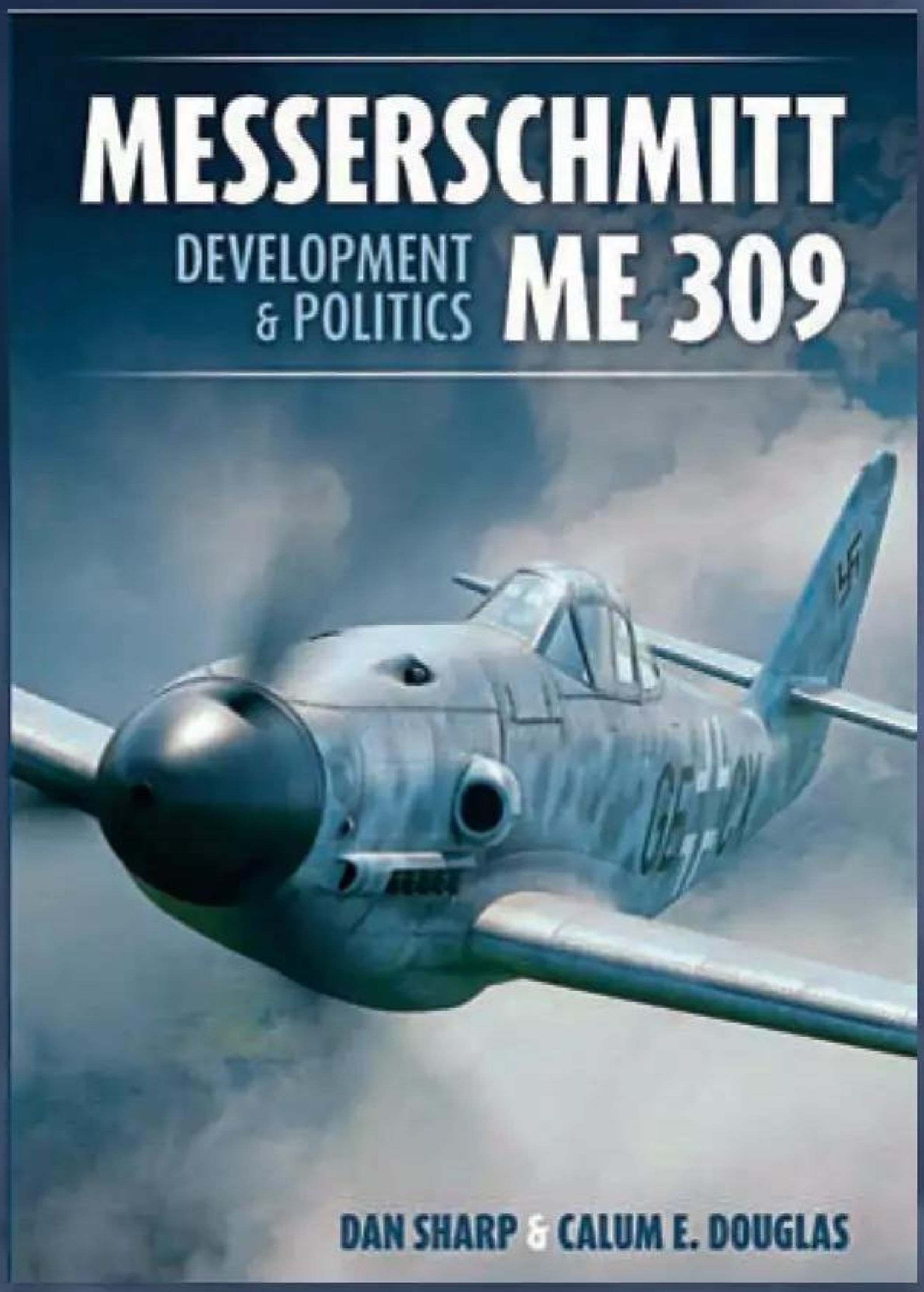
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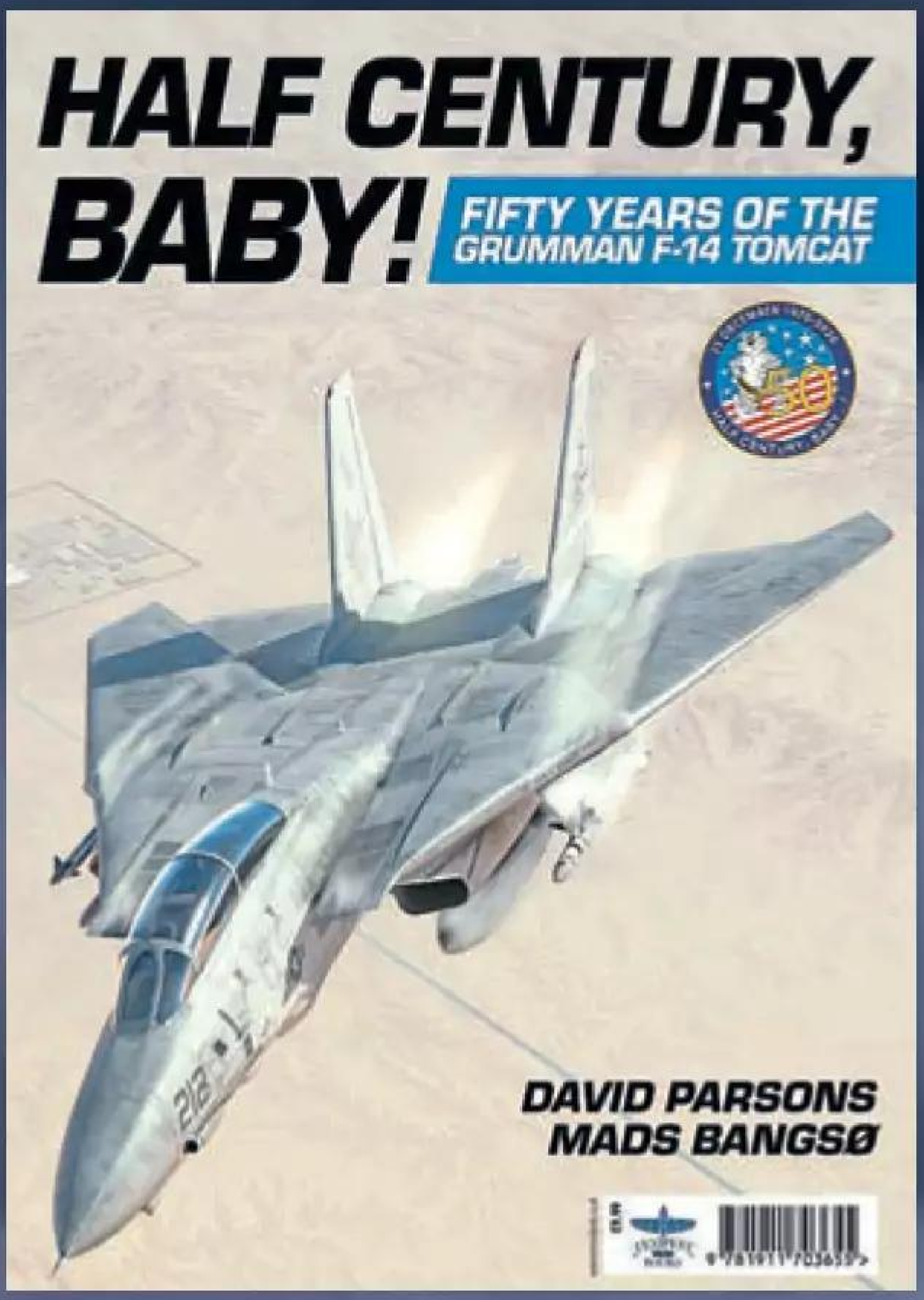
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TEMPEST BOOKS

Adolf Josef Ferdinand Galland

19 March 1912 – 9 February 1996

Galland, a German Luftwaffe general and flying ace, served in Europe during the Second World War. He completed 705 combat missions on the Western Front and in the Defence of the Reich.

He survived being shot down four times and was credited with 104 aerial victories, all against the Western Allies.

Galland, born in Westerholt, Germany, learned to fly gliders in 1929. After finishing his pilot training in 1932, he joined the German air force in 1934. In 1937, he volunteered to fight in the Spanish Civil War, flying missions to attack targets on the ground. He later wrote instruction books and taught other pilots before flying similar missions in Poland in 1939. In early 1940, he convinced his bosses to let him become a fighter pilot.

Galland flew Bf 109s over France and Britain, achieving 57 victories by 1940 and 96 by November 1941. After Werner Mölders' death, he was appointed General der Jagdflieger and was no longer permitted to fly combat missions.

A major success came for Galland in early 1942, when he planned and commanded the Luftwaffe's air cover for the *Kriegsmarine* Operation Cerberus, this earned him the Knight's Cross of the Iron Cross with Oak Leaves, Swords and Diamonds.

From the summer of 1942 to mid-1944, Galland was heavily involved in new aircraft development and procurement. He regularly attended staff meetings chaired by Erhard Milch, the Secretary of State for Aviation, and presented the Luftwaffe's view on designs such as the Do 335, Ta 152 and Me 262.

Adolf Galland.

He was instrumental in the latter's success, having test-flown the fourth prototype at Lechfeld on May 22, 1943. In his autobiography, The First And The Last, published in 1953, he described the feeling of piloting the aircraft: "For the first time I was flying by jet propulsion! No engine vibrations. No torque and no lashing sound of the propeller. Accompanied by a whistling sound, my jet shot through the air. Later, when asked what it felt like, I said, 'It was as though angels were pushing'.

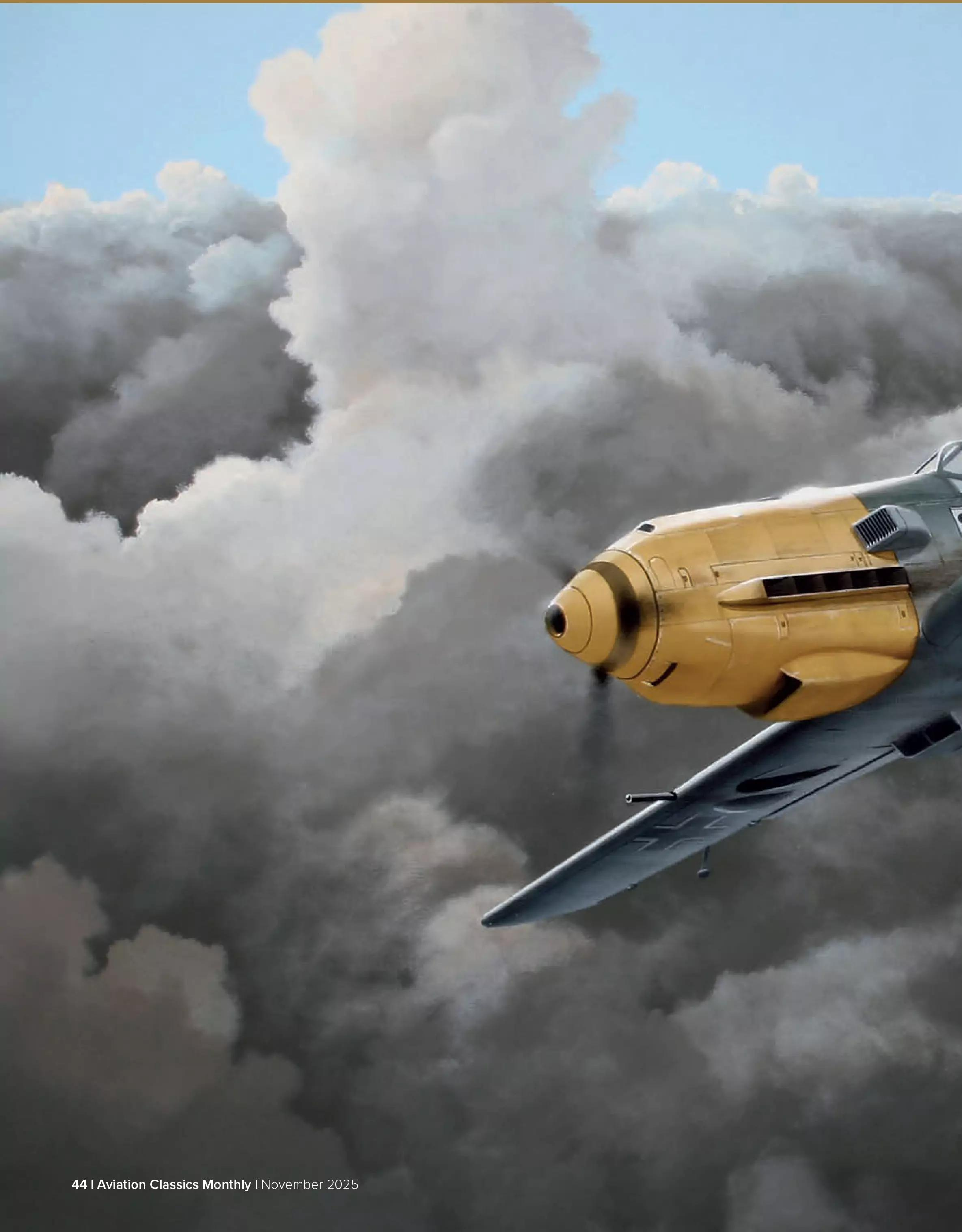
As time went on, Galland's disagreements with *Reichsmarschall* Hermann Göring on how to combat the Allied Air Forces bombing caused a strain in their relationship.

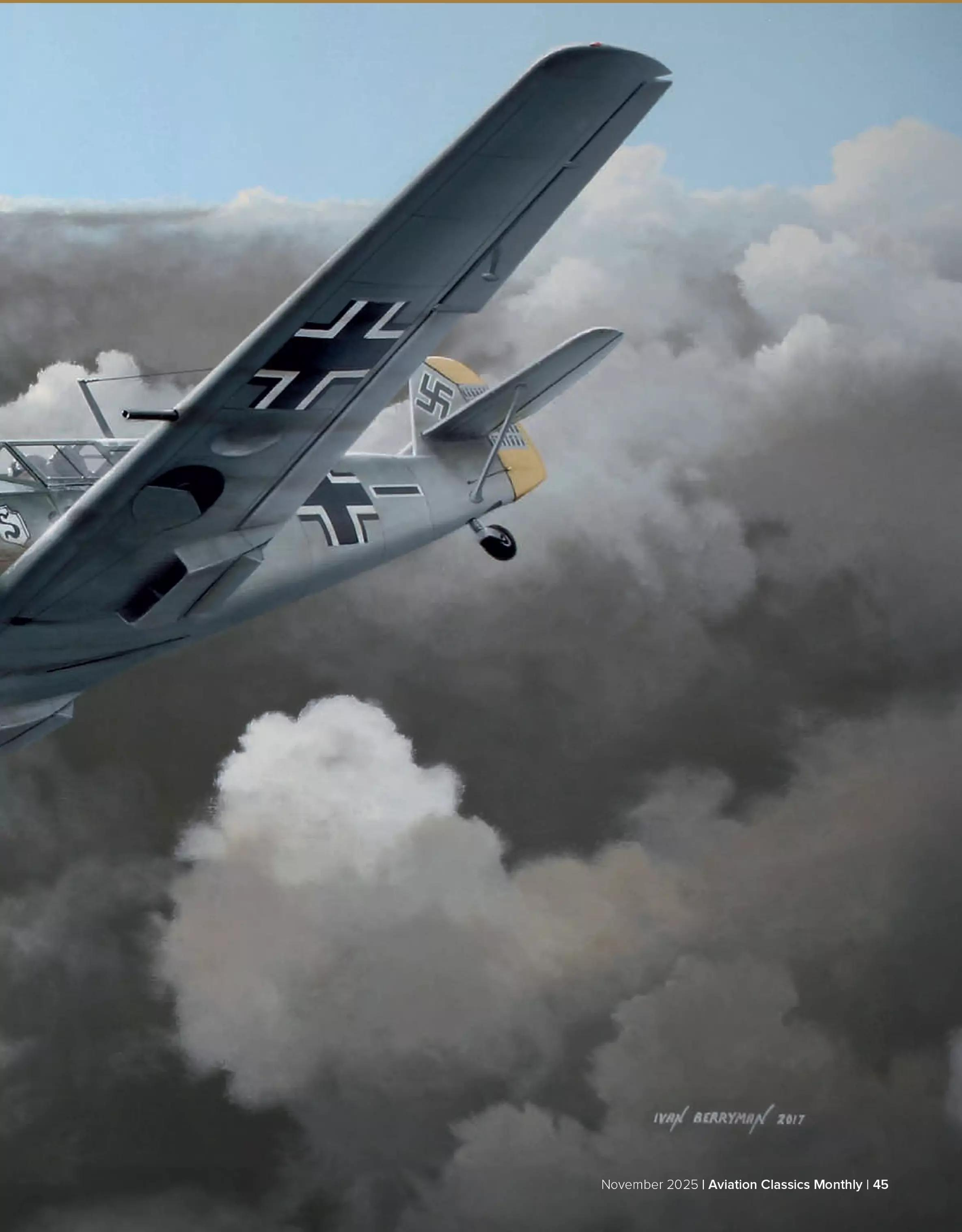
By 1944, the Luftwaffe fighter force was under immense pressure, and Göring blamed Galland for failing to prevent the Allied strategic bombing of Germany during daylight hours. The relationship came to an end in early 1945, when Galland was relieved of his command because he constantly criticised the Luftwaffe leadership. He was then put under house arrest after the so-called Fighter Pilots' Revolt, when senior fighter pilots confronted Göring about how the air war was being conducted.

Galland returned to operational flying in March 1945, and was allowed to form a jet fighter unit calling it Jagdverband 44, flying missions over Germany until the end of the war.

During peacetime, Galland was employed by Argentina's Government acting as a consultant to the Argentine Air Force, returning to Germany later and managing his own business. Galland also formed friendships with several former enemies, such as Douglas Bader and Robert Stanford Tuck.

See a tribute to Adolf Galland on the following centrespread courtesy of Ivan Berryman. Titled 'On a sortie from Caffiers, France in 1942'. ■




IVAN BERRYMAN 2017

The rescue of MUSSOLINI

When Italian dictator Benito Mussolini's regime collapsed and he was arrested in 1943, Adolf Hitler called on SS Hauptsturmführer Otto Skorzeny, to find and free him. 'Il Duce' was being held at a mountain hotel, so a daring rescue plan was hatched – 'Unternehmen Eiche' (Operation Oak) – which required an audacious assault using DFS 230 gliders. The result would be a big propaganda win for the SS, as Neil Page reports…

An unidentified pilot of 12./LLG 1, who took part in the successful operation.

In his memoirs, published shortly after the war, Skorzeny describes how on 25 July 1943 he was urgently called to Adolf Hitler's headquarters.

He was presented to the Führer along with other 'adventurers' and was singled out for two reasons: he had travelled through Italy on a motorbike in 1934 and… he was Austrian like Hitler. In short, he knew the Italians but distrusted them, having, like many of his compatriots, always refused to support the Italian annexation of Alto Adige (South Tyrol).

Hitler informed him of Mussolini's arrest on the same day and his desire to free him. The Führer foresaw the forthcoming Italian volte-face and the handing over of the Duce to the Allies. Together with Kurt Student, Skorzeny flew to Rome where he met Kesselring, and welcomed a small detachment of his men who had also arrived by air along with elements of Fallschirmjäger-Regiment 7 on their way to the south of the Italian boot.

The German secret services and a small group of trusted men around Skorzeny searched frantically for the Duce's place of detention. They relied on gossip, listened to the 'confidences' of Italian officers, paid informers, etc. Mussolini was sometimes reported as being held on a cruiser, sometimes in the Apennines, sometimes in Sardinia, sometimes on an islet near Elba, etc. The Italian secret services seemed to be doing their utmost to mislead their German counterparts. But at the beginning of September, according to Skorzeny: "My small personal intelligence service brought us absolute certainty: Benito Mussolini was interned, well-guarded, in a mountain hotel in the Gran Sasso range."

On 8 September 1943, the Austrian and his second-in-command took off in a He 111 from Pratica di Mare to fly over the Gran Sasso mountain range and photograph the Campo Imperatore hotel, where the Duce was being held. On their return, they learned of the Italian 'change-of-sides'.

In tow behind a Henschel Hs 126.

The days that followed were feverish and confused.

Some Italians had indeed laid down their arms... Badoglio's government had not seen fit to declare war on its erstwhile ally (it would not do so until 13 October). But in Rome, in other Italian cities and in the Balkans, Italian soldiers quickly opened fire on their former German comrades. Bloody fighting broke out everywhere.

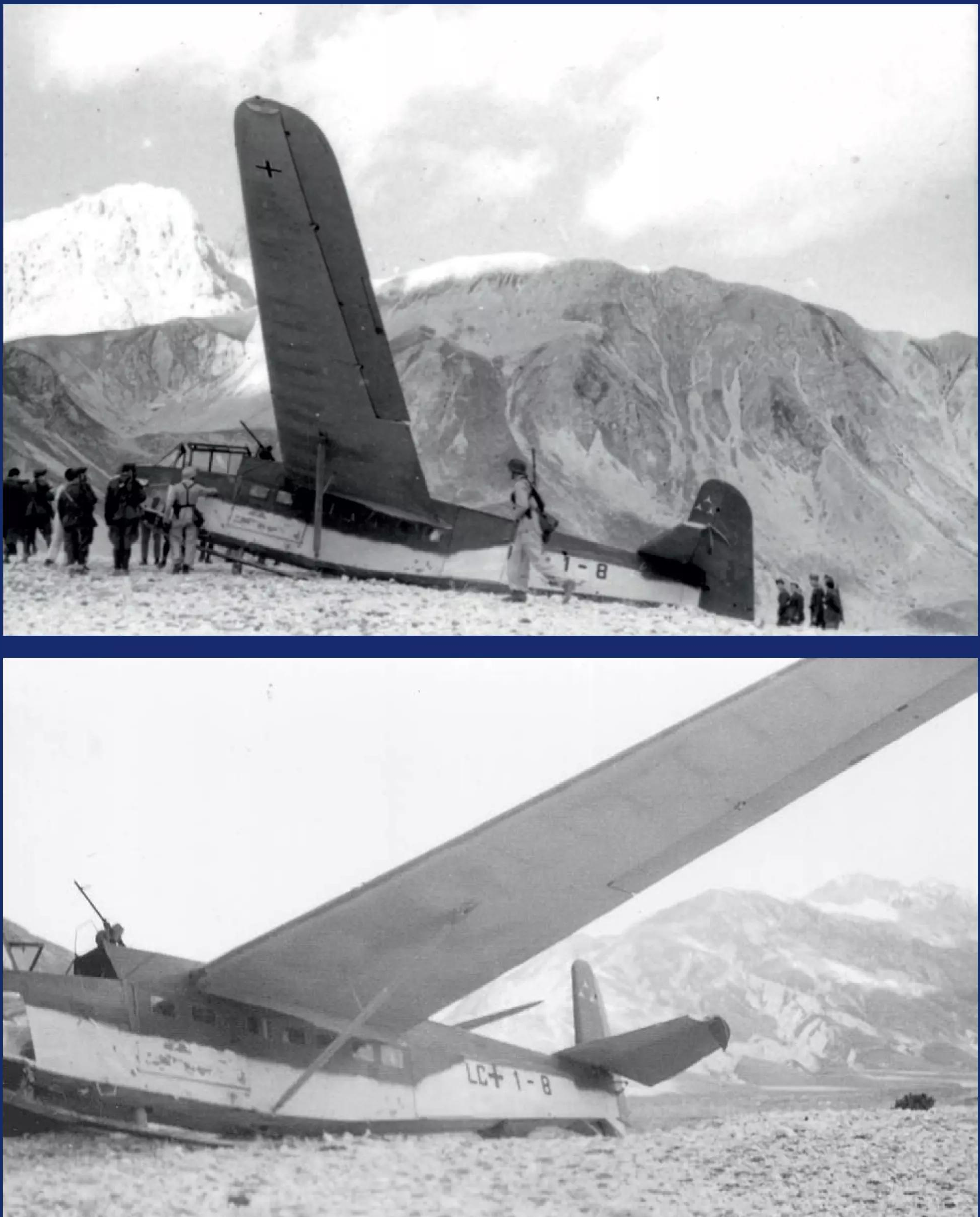
The chaos made it difficult to hold meetings and, according to Skorzeny, the photos were not studied until 10 September. The Hauptsturmführer declared that he had chosen a triangular meadow close to the hotel, which would allow gliders to land: "It was then that the Chief of Staff of the Fallschirmjäger corps was assigned to us as experts for this airborne operation. They were against my plan. They were of the opinion that an airborne operation at this altitude and without a prepared landing field would be technically unfeasible. They also thought that this type of landing would cause around 80% casualties. The remaining troop numbers would be too small to have any chance of success. I defended my opinion. After due consideration, General Student gave his final approval. Twelve gliders were to be launched immediately from the south of France towards Rome. The date set was 12 September."

Skorzeny's account seems to be contradicted by the report of Oblt Johannes Heidenreich, Staka of 12./LLG 1: the Sonderstaffel Heidenreich took off from Valencia on 8 September 1943 at 0856 and flew to Ottana (Sardinia) in stages: Saint Raphaël, Pisa, Grosseto, Venafiorita. The tug aircraft were Hs 126s with limited range. It is likely that this Staffel was activated on the 8th to take part in the operation to free the Duce, who was then thought to be held in the Sardinian sector. Skorzeny's 'original idea' is therefore somewhat questionable...

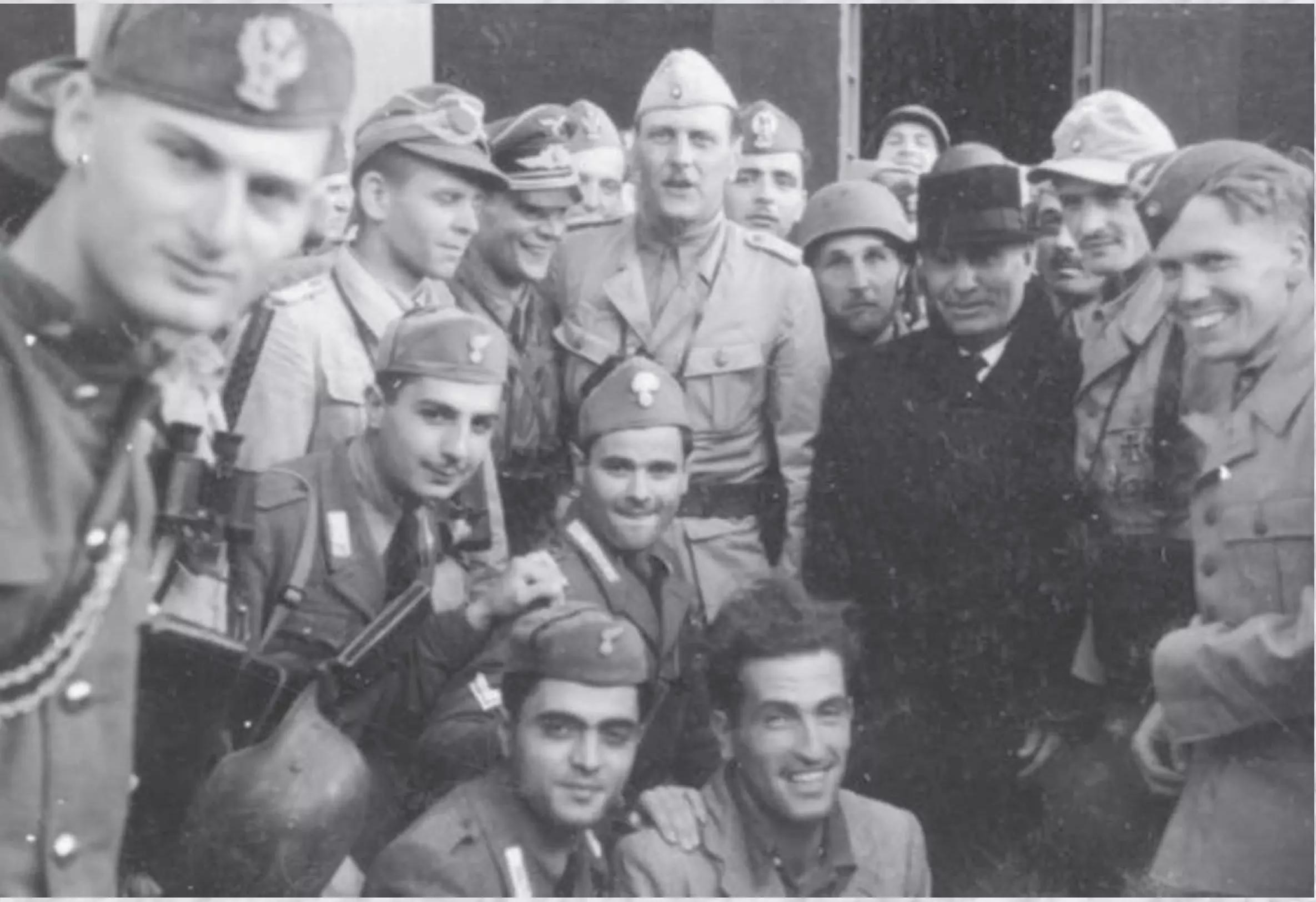
Still according to Heidenreich: "The Staffel reached Grosseto the same day at 1758 with 11 tug-glider Schleppzüge. A twelfth was forced to land in Sarzana. Two others had to temporarily remain in Pisa following slight damage to the gliders. On September 11 at 1800, the Sonderstaffel received the order to fly to Pratica di Mare … There were some difficulties due to the rough nature of this airfield but ten teams were able to achieve it … At Pratica, I dispersed the aircraft and gliders, putting them under cover to limit damage in the event of an air attack … Around 1030, a meeting was held with Hstuf Skorzeny, Oblt Georg von Berlepsch and various paratrooper officers.

Hptm Langguth detailed the aerial photos for us. I assigned the glider pilots according to landing locations."

According to Skorzeny, "the pilots and group leaders, Hauptsturmführer SS Menzel, Obersturmführer SS Radl, Scharführer SS Schwert, Oblt von Berlepsch and eight



Two views of ‘LC + 1-8’, probably the DFS 230 piloted by Lt Elimar Meyer of 1./LLG 1 with SS Hauptsturmführer Otto Skorzeny on board. Meyer flew the DFS 230 to within 15m of the Campo Imperatore hotel, where the Duce was being held.



Freed, Mussolini (black coat and hat) is photographed with his liberators… and his jailers. Tall and imposing, Skorzeny is clearly recognisable to his right even though he is wearing a Luftwaffe uniform rather than that of the SS.

other group leaders of the paratroopers were gathered in a room where General Student made a rather short presentation according to which, in all cases, only a ‘skid’ or ‘sliding’ landing was permitted. Any attempt to come in on a steep vertical approach was prohibited because of the special danger it presented.”

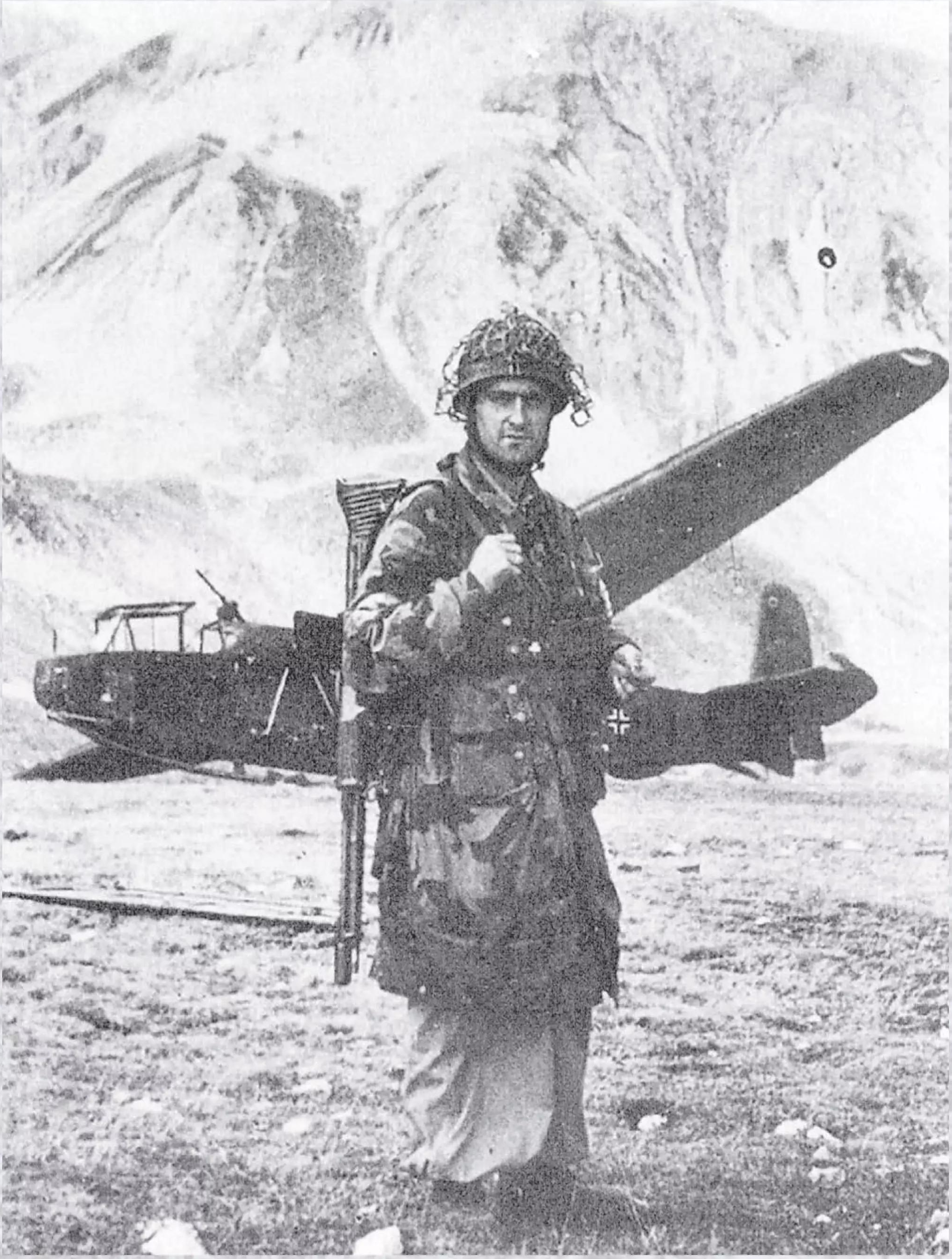
Indeed, due to the strong winds on the Gran Sasso and the impossibility of correctly using the braking parachute, only more or less horizontal landings were possible. Skorzeny adds in his account that it was he who gave the practical instructions to the pilots — which was probably unlikely. The operation almost failed to get underway at 1210 following an air raid alert. According to Skorzeny, bombs fell on the airfield but did not hit any aircraft. Heidenreich, for his part, does not mention this. The Henschel 126s were quickly refuelled (some partially) and the men boarded.

Skorzeny resumes his story: “We boarded our gliders and sat astride the narrow bench serving as a seat. We were packed together like sardines.

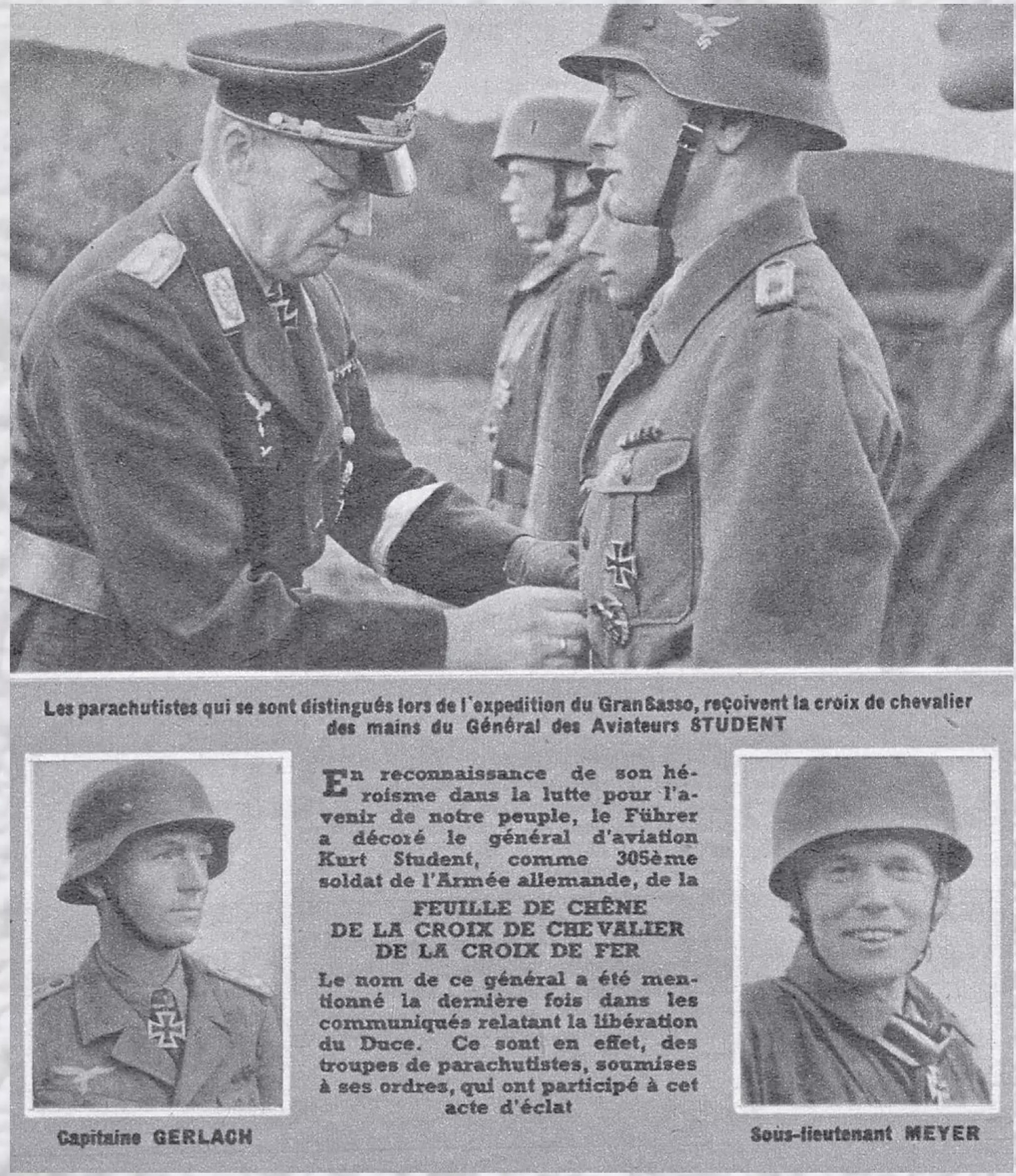
There was barely enough space left for our armament … I gave the signal for takeoff. The engines roared. We gained altitude slowly, describing large circles. The glider formation headed north-east. The weather seemed ideal for our business. Great white clouds hung in the skies at 3,000m. If they stayed in place, we could arrive almost unnoticed.

“We could hardly move. I noticed that the soldier behind me was starting to get sick … He began to vomit but fortunately into a cap handed to him by a comrade … The pilot kept us informed about the relative positions of the aircraft. From inside the DFS, you could barely see anything of the landscape. The small side windows were almost opaque and the slits were too small. The DFS 230 was an airy machine — a few steel tubes covered with canvas. We didn’t appear to have made much progress on this point, as surely an aluminium fuselage would have been more ‘elegant’. We flew through a cloud more imposing than the others to reach the altitude of 3,500m. For a short moment, everything was grey around us. Soon we came out into bright sunshine. We were above the clouds…”

The crew of the Henschel then reported by radio that two tug-glider teams were missing. According to Skorzeny, they were in an accident during takeoff but Heidenreich, who flew as an observer in one of the Hs 126 tugs, specified that a Rotte took the wrong direction, suggesting that the mission was abandoned. Heidenreich, however, was not fooled and continued on his way, leading the other Hs 126/DFS 230 ‘teams’ in his wake. Skorzeny claims to have taken command of



The ‘famous’ propaganda photo – a parachutist of 1./FJR 7 at Gran Sasso with the rare FG Fallschirmjägergewehr 42 machine gun of the German paratroopers.



Les parachutistes qui se sont distingués lors de l'expedition du GranSasso, reçoivent la croix de chevalier des mains du Général des Aviateurs STUDENT

En reconnaissance de son héroïsme dans la lutte pour l'avenir de notre peuple, le Führer a décoré le général d'aviation Kurt Student, comme 305ème soldat de l'Armée allemande, de la

FEUILLE DE CHÊNE
DE LA CROIX DE CHEVALIER
DE LA CROIX DE FER

Le nom de ce général a été mentionné la dernière fois dans les communiqués relatant la libération du Duce. Ce sont en effet, des troupes de parachutistes, soumises à ses ordres, qui ont participé à cet acte d'éclat

Capitaine GERLACH

Sous-lieutenant MEYER

The Luftwaffe magazine *Der Adler* reports on the award ceremony for the Gran Sasso fighters. Generalmajor Kurt Student presents the Knight's Cross to Meyer, the DFS 230 pilot, and Gerlach, who flew Mussolini off the mountain in the Fi 156.

the formation at that moment: "Using my paratrooper's dagger, I cut fist-sized holes in the fabric of the fuselage to get a glimpse of the exterior. I was happy enough then at the age of the gliders and their canvas covering against which I had just railed."

As the gliders approached their objective, the wind gusts increased in strength and the clouds grew thicker. The aircraft appeared over the Gran Sasso coming from the sun. At 1403 the first glider detached and flew as planned over the mountain hotel. The others followed at very short intervals. They now had to come in and land in the meadow located a few dozen metres from the hotel.

According to Skorzeny: "I shouted, 'Helmets on.' The hotel appeared below us. Our tow cable was dropped. We were

Gerlach, Student's personal pilot, and Meyer receive the Ritterkreuz, the aircraft pilot wearing the Stahlhelm while the glider pilot wears the parachutist helmet.

suddenly surrounded by a silence disturbed only by the whistling of the wind on the wings of the glider. The pilot described a wide circle searching the gently sloping meadow, the designated landing spot…"

It was then realised that the meadow was much more rugged than the photos taken by Skorzeny aboard the He 111 had led the raiders to believe. Lt Elimar Meyer, pilot of the DFS 230 in which the Hauptsturmführer was flying, elected at that point — and based on his experience – to embark on the prohibited manoeuvre: diving more or less vertically while triggering the opening of the braking parachute.

He left a very detailed account of the mission: "We flew over the first heights east of Rome, the foothills of the Sabine Mountains. The formation headed continuously eastwards, gradually gaining altitude. Half hidden by the clouds, the Gran Sasso mountains appeared ahead of us. Three-quarters of our flight time is up. Quickly one last look at the map and the aerial photo. The little black dot in front must be the Campo Imperatore. With my left hand, I release the cable, the tractor plane disappears in a dive and I immediately feel the nose of my glider pointing downwards. I decide not follow the instructions given by Skorzeny —besides, why was a passenger giving me the pilot orders on how to fly my mission? In any case, where he's sitting, he can't see anything.

"The point becomes clearer. It's a big building. I use the rudder pedals to position myself well, but the swirling winds against the rock walls make my task difficult. I managed to fly over the building — there is no sign of life. Is it abandoned? Suddenly, four faces appeared at a window. If they

are soldiers they are probably surprised by the arrival of these unknown aircraft. I then discovered that the flat land 'identified' by the aerial photos was in fact sloping and stony. I make my decision directly. I turn very sharply, pinning the crew and passengers in their seats and throw my glider on the ground while braking as hard as possible. For a second I close my eyes and am unable to think. There is a final shock more brutal than the others. The machine reared up on its nose. We had landed.

"The door was thrown open and the first soldier was already outside. I dropped down from the cockpit, weapon in hand, next to the glider. We were 15m from the hotel. All

Three airmen from 12./LLG 1 are awarded the DKiG.

around us the rocky terrain slowed down our machine very quickly but had wrecked it in the process. Our landing to a standstill took less than 20m. The braking chute billowing out behind us slowly collapsed…"

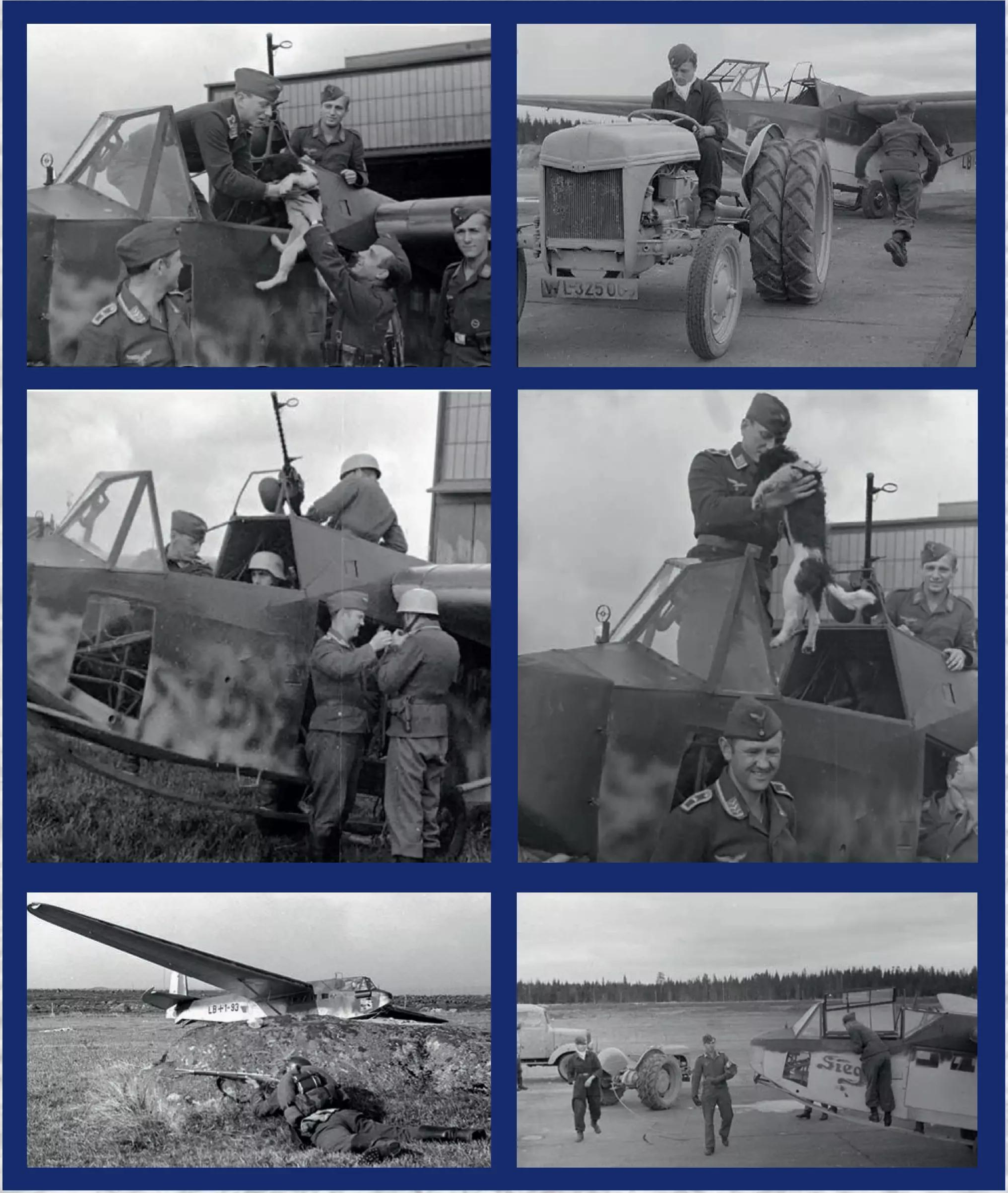
A little behind them, Fw Heiner Lohrmann landed some 300m from the hotel. There were only about 60 men, pilots included, heading towards the Duce's 'prison'. The rest of the story is well known. The effect of surprise and the FG 42s (FJR automatic assault rifles) compensated for the numerical superiority of the enemy (some 150 Italian soldiers). "Mani in alto!" (Hands up!). In a few minutes, the unmotivated Carabinieri had laid down their arms and the hotel was in the hands of the Fallschirmjäger, practically without combat and without loss of life.

Skorzeny then entered Mussolini's room and declared: "Duce, der Führer schickt mich! Sie sind frei!" The hotel being connected to the valley by a cable car, a large detachment of paratroopers simultaneously captured the lower station to prevent any sending of Italian reinforcements.

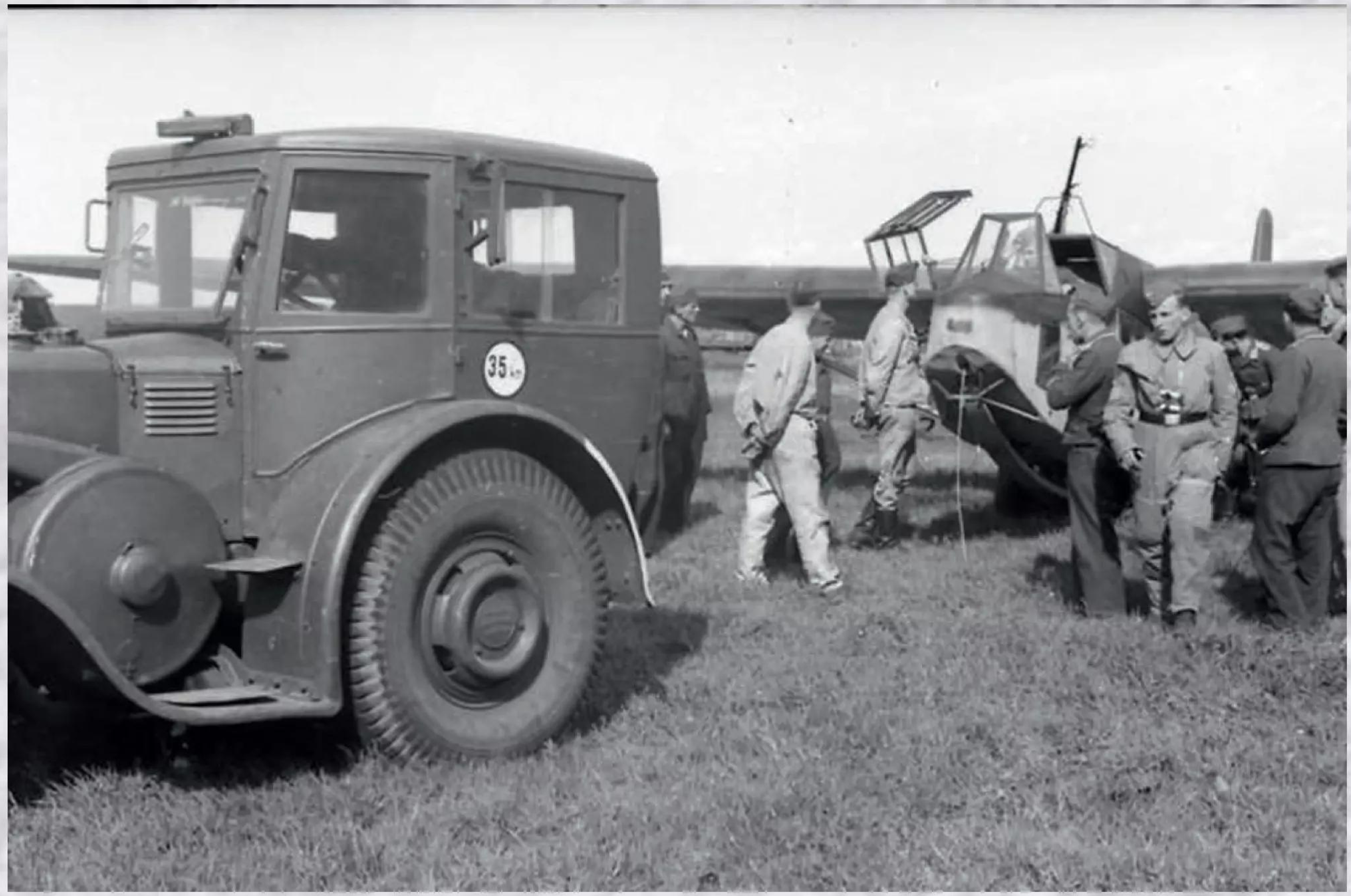
However, bringing Mussolini down by cable car was risky. A Fi 156, piloted by Hptm Heinrich Gerlach, Student's pilot in the XI. Fl.K., made a straightforward landing on the plateau to evacuate the Duce. At which point Skorzeny took the initiative of climbing into the Storch.

His huge frame and weight added to that of Gerlach and the passenger, together with the short takeoff 'track' made the next stage of the operation unnecessarily risky. But the SS officer did not budge. Evidently the Austrian feared, if Mussolini arrived alone in Berlin, that the glory of his liberation would be attributed to the daring action of the paratroopers alone.

With this additional ballast, the Fieseler Stork launched into a potentially deadly dive off the side of the mountain. Pilot Gerlach barely succeeded in pulling it up. Once in front of the Führer, Skorzeny monopolised the 'glory'; praised by the propaganda services, he was rewarded with the Ritterkreuz. Meanwhile, on the Gran Sasso, the airborne personnel dismantled the onboard equipment of the 12 DFS 230s before setting fire to the airframes. They couldn't be flown out of course and the impacts with the rocky ground mostly destroyed or seriously damaged them. One



This photo series was taken by Propaganda-Kompanie Bildberichter Wolfgang Stocker with 8./LLG 1. The Staffel spent a month training in Norway in late 1943. Here at Banak airfield, Luftlandegeschwader 1 personnel gear up for an exercise over the airfield while playing with the unit's Staffelhund – dog mascot – which is passed up into the DFS-230 coded 'LB+1-97'.
The Feldwebel holding the dog is Günther Naumann of the Fallschirmjäger Kriegsberichterzug or airborne propaganda section. He held the combat clasp for airborne or transport units (Frontflugspange), as well as the Iron Cross and the radio gunner's brevet (Bordschütze).
The tractor tug is a Ford-Ferguson 9N with its radiator exposed. Note the nose-art on the DFS in the lower image – 'Sieg' or 'victory'.
Reporter Stocker was killed in Italy during 1944. More of his images can be seen on the ECPA-D website (http://imagesdefensegouv.fr).
WOLFGANG STOCKER ECPA-D FALLAOK F1537/52/97. COURTESY NICOLAS FERARD



An Italian vehicle used to position a DFS 230.

pilot was injured. The airborne troops came down into the valley using the cable car.

At a ceremony held a few days later, Hptm Heinrich Gerlach was awarded the Ritterkreuz, as was Lt Elimar Meyer, the pilot of Skorzeny's glider.

Although he subtly took the lion's share of the credit, the Austrian was not averse to sharing the 'spotlight'. Oblt Georg von Berlepsch, who led the paratroopers of 1./FJR 7, received the Deutsches Kreuz in Gold (he was killed on 2 February 1944 during the fighting at Nettuno), as did the Staka of 12./LLG 1, Oblt Johannes Heidenreich, and two DFS 230 pilots, Ofw Hans Neelmeyer and Uffz Gustav Thielmann. In his report, Heindenreich lists the names of the other glider pilots: Uffz Karl- Heinz Ronsdorf (wounded), Fw Heiner Lohrmann, Ofw Beerenboldt, Uffz Maier, Uffz Jenniches, Uffz Gedenk and Uffz Stark.

As Jean-Louis Roba explained: "Soon after the end of the war, the in-demand Otto Skorzeny wrote his successful memoir. He soon became 'Mussolini's liberator' for the media and the general public. Yet his account is full of fabrications: in addition to his astonishing foresight and knowledge of the DFS 230, it was he who 'instructed the pilots', it was he who 'took charge of the air formation', it was he who 'ordered Meyer to drop the cable at the right moment', and so on.

"In his own account, Elimar Meyer has done justice to many of these 'exaggerations'. Without the parachutists, Skorzeny would never have been able to free Mussolini and, without the DFS 230 glider pilots, the parachutists would never have been able to surprise Mussolini's jailers. Skorzeny later received an angry letter from the Fallschirmjäger Association criticising him for playing down the vital role of the airborne pilots. The Austrian replied with a letter of apology stating that this had never been his intention. But despite this, SS Hauptsturmführer Otto Skorzeny will remain for posterity (and as the Propagandastaffel had wanted) the impetuous leader of the Reich's commandos, the only hero of the Gran Sasso."

Six days after the success of Operation Eiche, DFS 230 Lastensegler units in the Mediterranean were dealt a final blow when USAAF bombers raided Pratica di Mare airfield, which was crowded with Ju 52s and transport aircraft of all types. The attack was just as destructive as the raid on Istres one month earlier. LLG 1 lost 12 aircraft (Do 17, Hs 126 and Avia 534) and three others were damaged. Thirty-six DFS 230s were destroyed and 21 damaged. Although not specified in the casualty list, seven pilots were killed (probably members of the crews of tow aircraft). With the evacuation of the islands, the glider force was surplus to requirements and ordered back to France. ■

For more, see:
EAGLES OF THE LUFTWAFFE
DFS 230 COMBAT GLIDER
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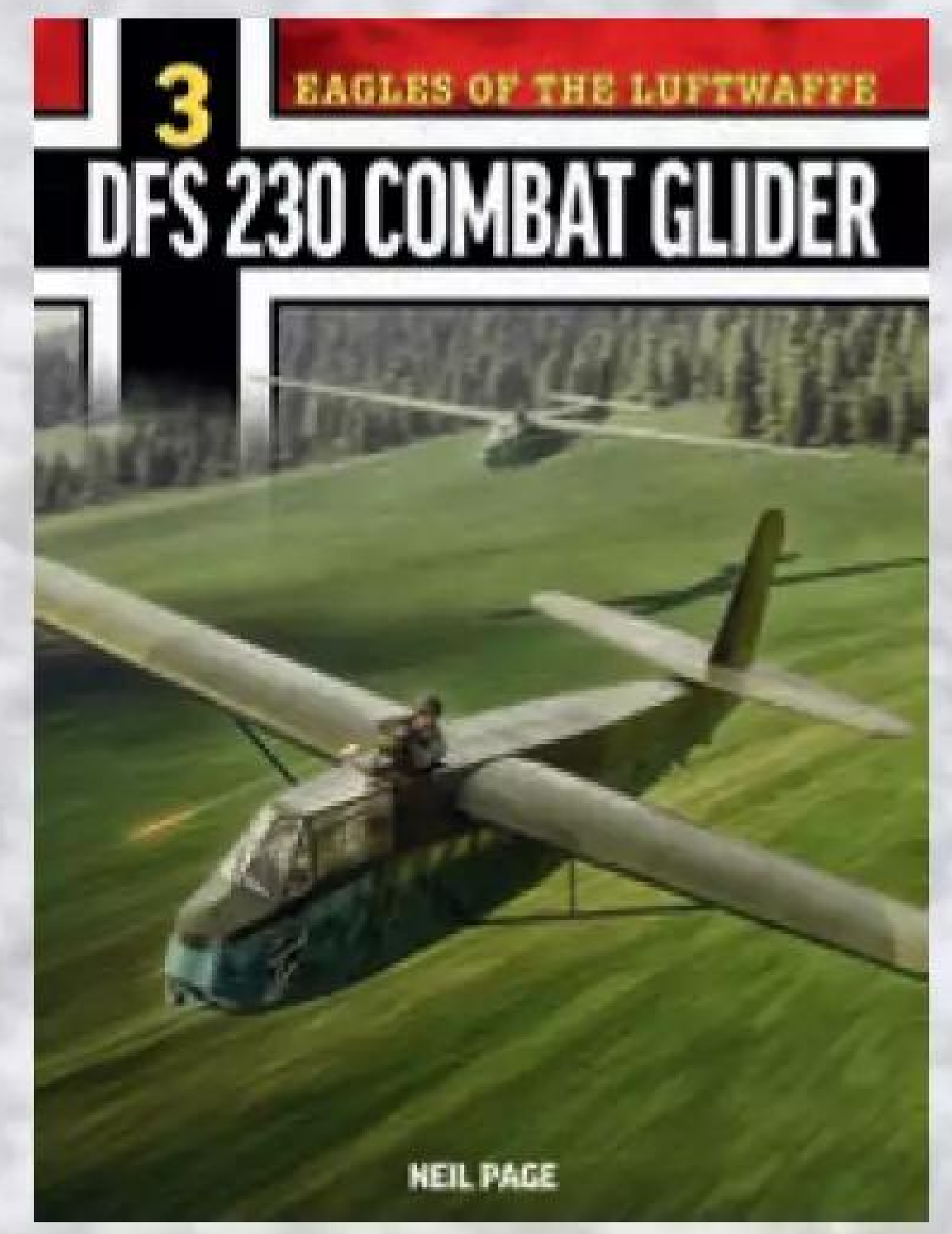
Published by **Mortons Media Group**
Paperback. Price on MortonsBooks.co.uk: £16.99



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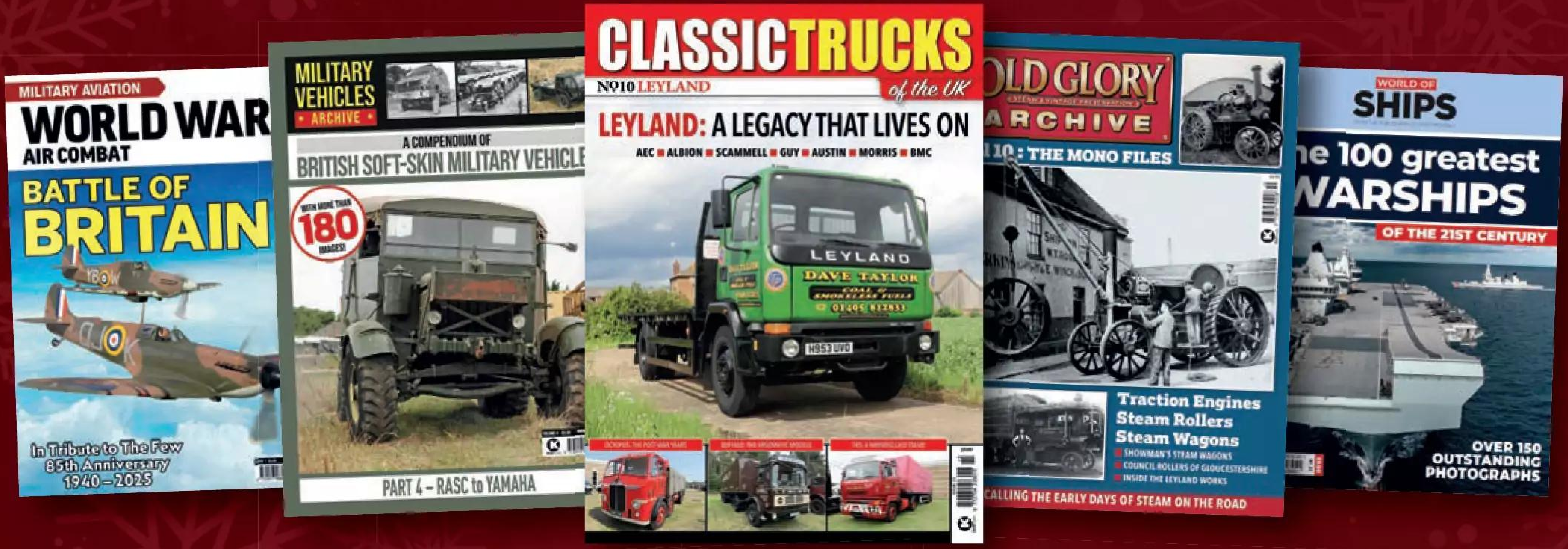
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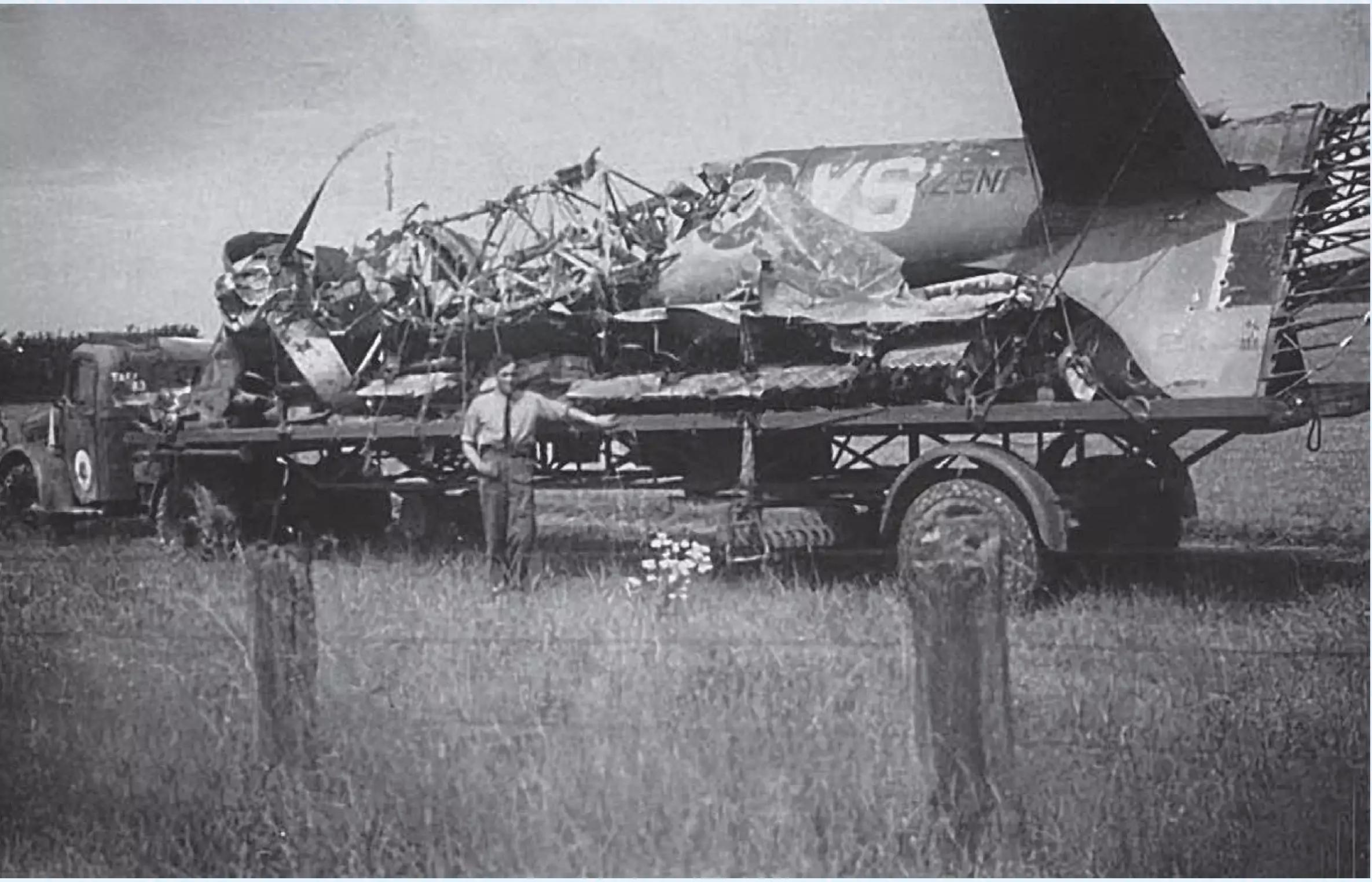


The sorry remains of Flying Officer Tom Austin's Hawker Tempest JN877 SA-Y being recovered on the back of a lorry. Was this the only aircraft ever shot down in combat by a Heinkel He 162?

HEINKEL He 162

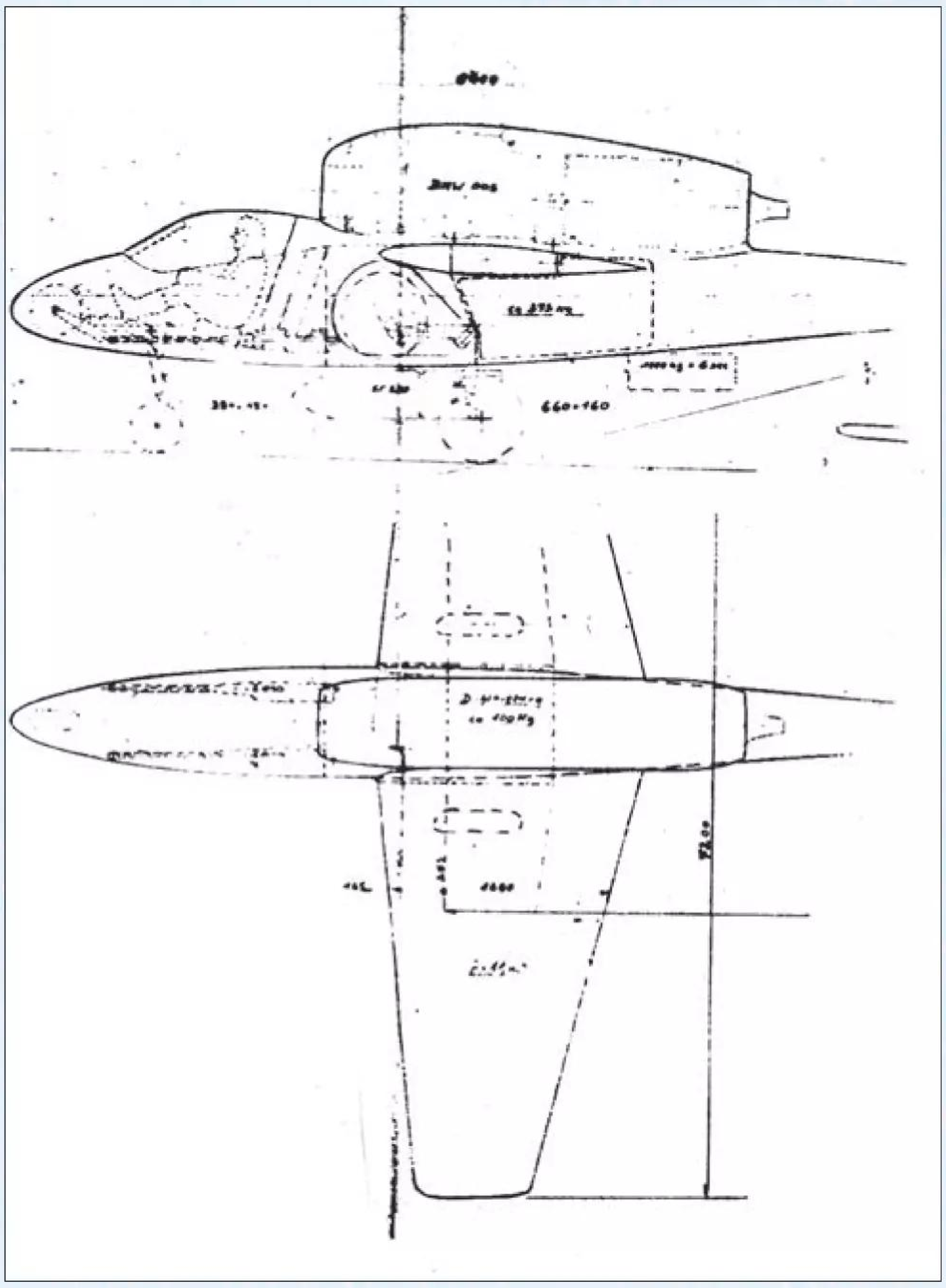
Heinkel's He 162 was the last German fighter to enter service during the Second World War. The team took it from drawing board to front line combat in just six months, but paid a terrible price – slave labourers died building it, and pilots died trying to fly it. But did it achieve anything at all?

The Heinkel He 162 was an aircraft born out of urgent requirements, innovative design under pressure and pure desperation.

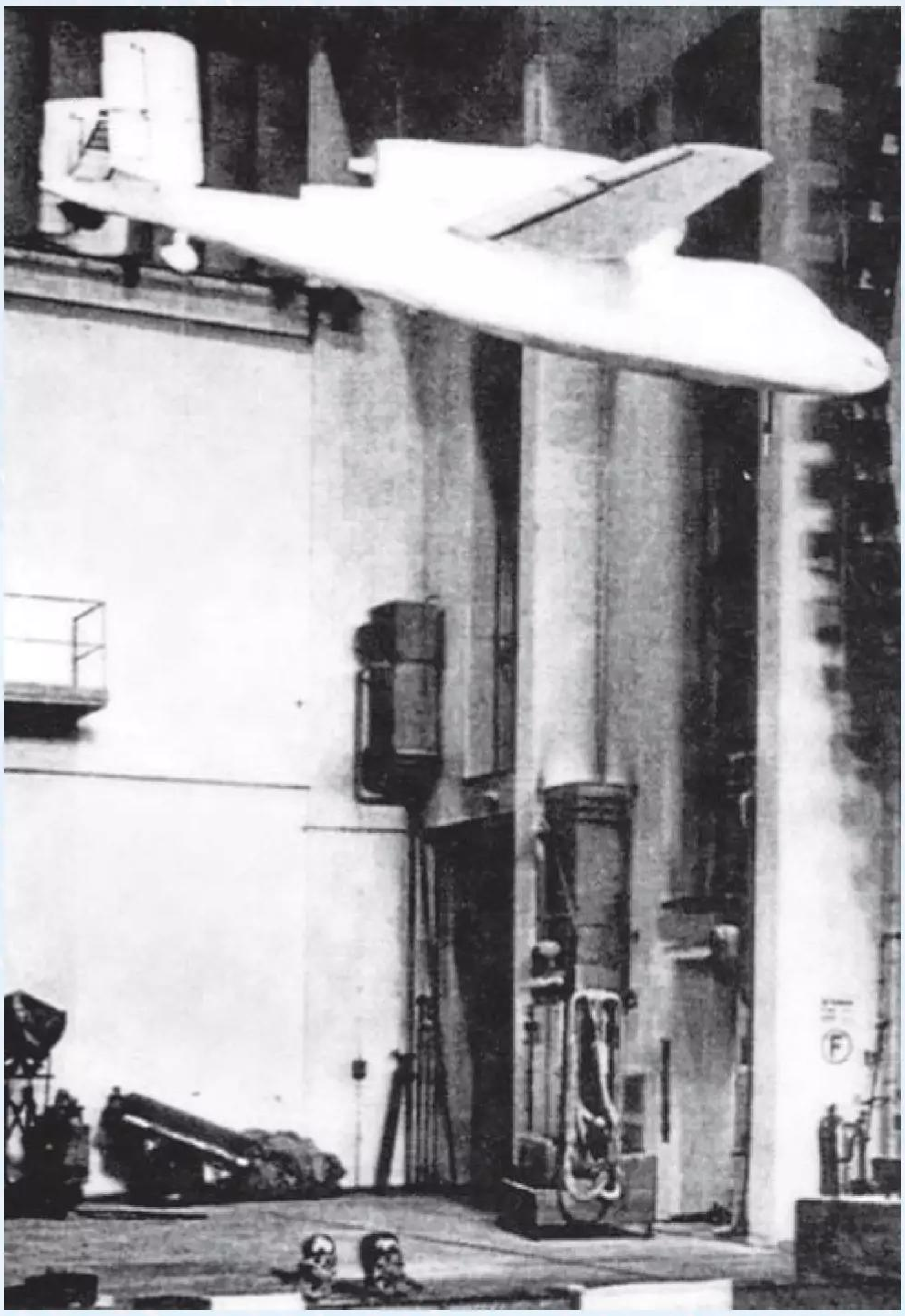
Efforts to produce a single-jet fighter aircraft began in Germany as early as 1938 when Messerschmitt, Heinkel and Junkers all came up with designs but these were soon dropped in favour of a twin-engine layout when it became clear that a single turbojet at that time would be insufficiently powerful for a fighter.

By the summer of 1943, the Jumo 004-powered Me 262 was well established as the Luftwaffe's jet fighter in waiting and Heinkel's plans to develop the much more powerful HeS 011 turbojet were, the company said, well advanced. Therefore, both Messerschmitt and Focke-Wulf were asked to begin designing single-jet fighters.

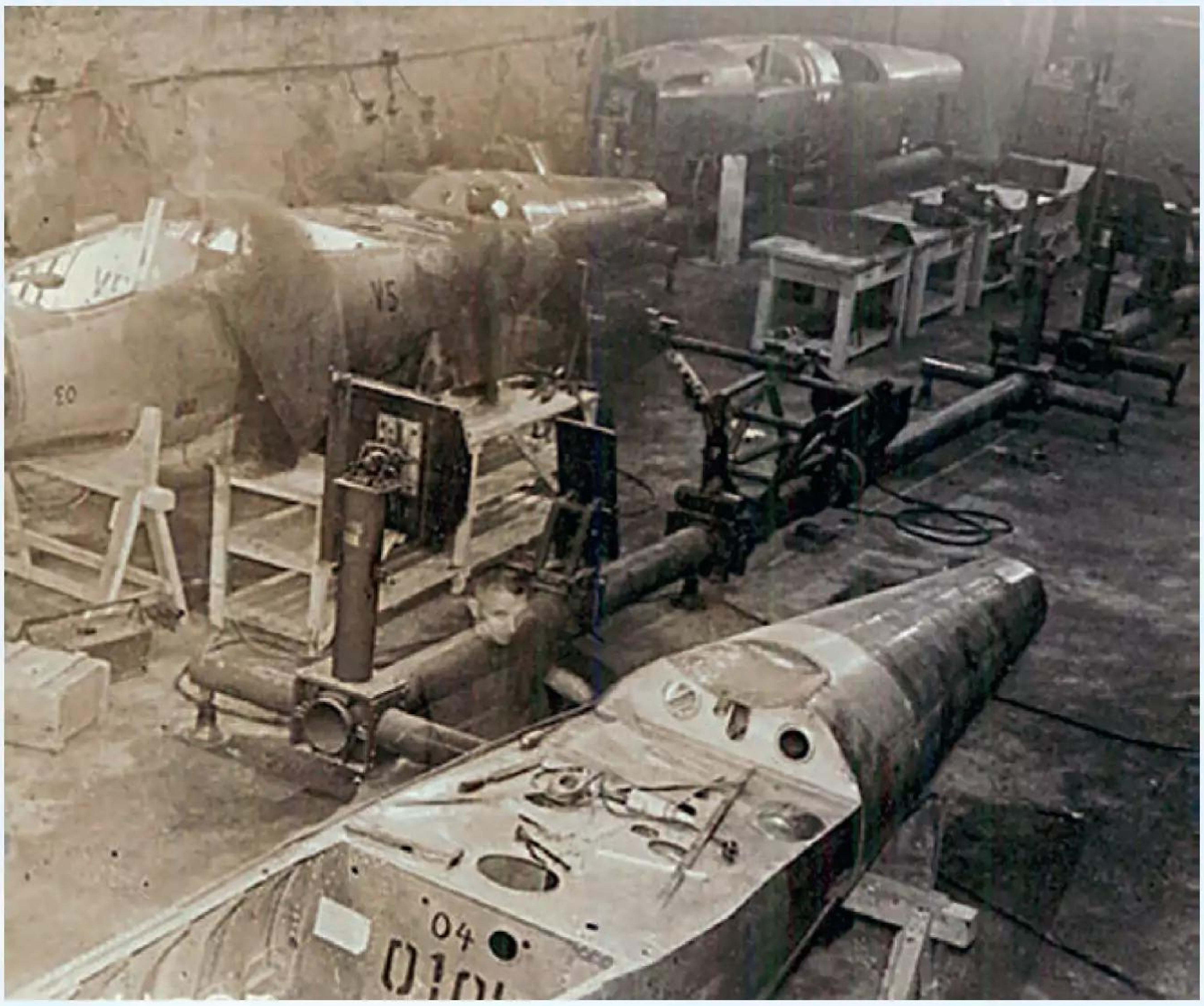
While Messerschmitt worked on various designs under the designation P 1092 before largely abandoning the idea, Focke-Wulf launched a series of projects aimed at refining the design of a single jet fighter. By the spring of 1944 the company felt it had come up with the best possible



A drawing of the Heinkel P 1073 design from a report dated September 23, 1944. Work on the project had begun two months earlier for the 1-TL-Jäger competition, envisioning a larger aircraft. This drawing shows the P 1073 close to its final form as the He 162.



A large wind tunnel model of the He 162 being tested in early 1945 at Berlin-Adlershof.



Fuselages under construction at the underground 'Languste' facility near Hinterbrühl. This was one of five sites involved in He 162 production.

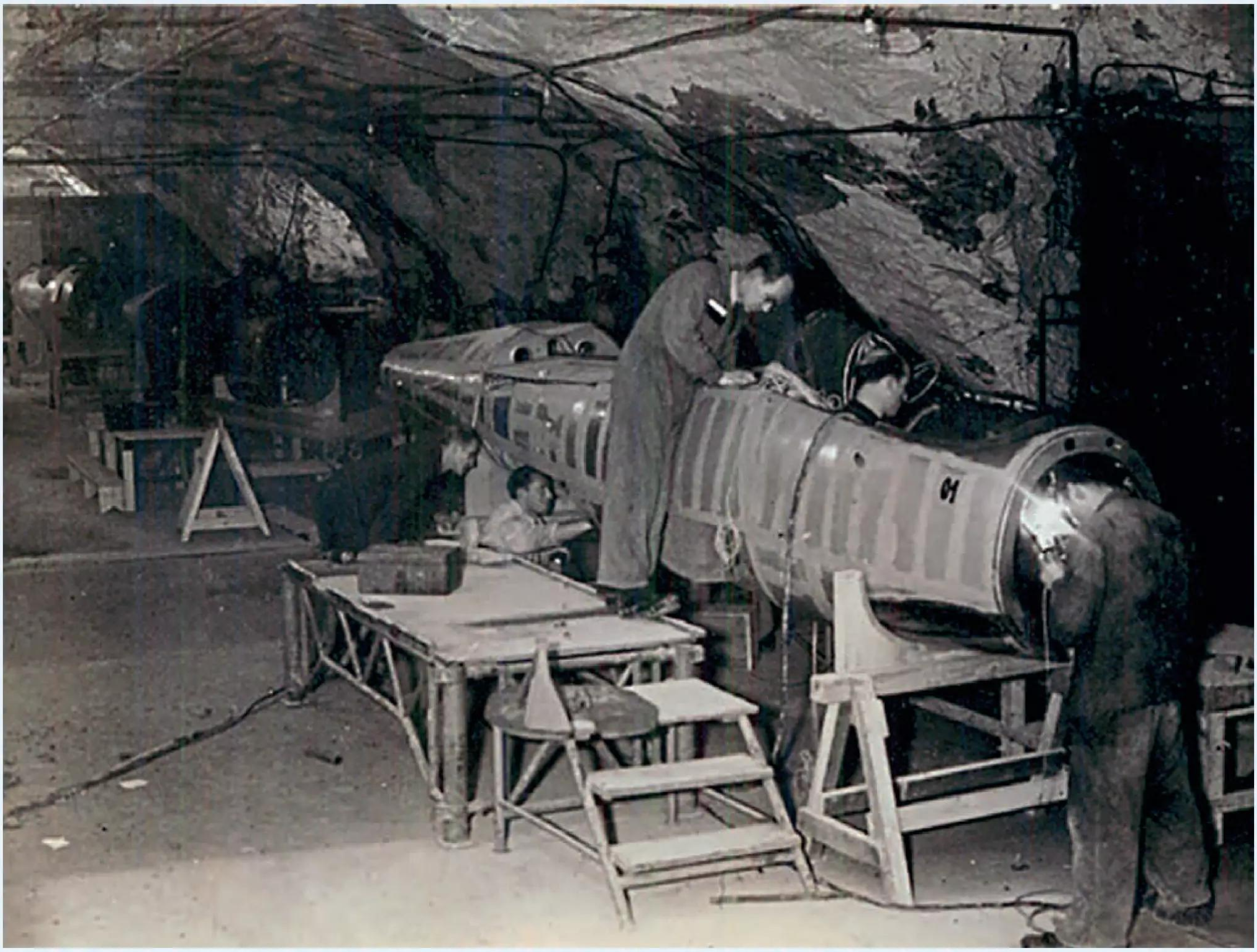
configuration – a twin-boom design known internally as the 'Flitzer'.

Finally, in July 1944 a specification was issued for the design of a new single-jet fighter in a competition known as 1-TL-Jäger. The first conference to compare designs was scheduled for September 8-10, with Heinkel, Focke-Wulf and Messerschmitt participating.

When the conference began, with Blohm & Voss also attending but not offering a design, it was quickly discovered that the three designs tendered could not be properly compared because each company had used a different set of equations to work out their projected performance figures.

Then on the third day, the offices of each company and those of Arado, Fieseler, Junkers and Siebel were sent a second specification for a single jet fighter – differing from the July spec in several key areas.

It called for a fighter of "the cheapest construction" with "extensive use of wood and steel" where the 1-TL-Jäger could be made using an agreed percentage of light ➤



Workers fit the wiring connections inside a He 162 fuselage at 'Languste'.

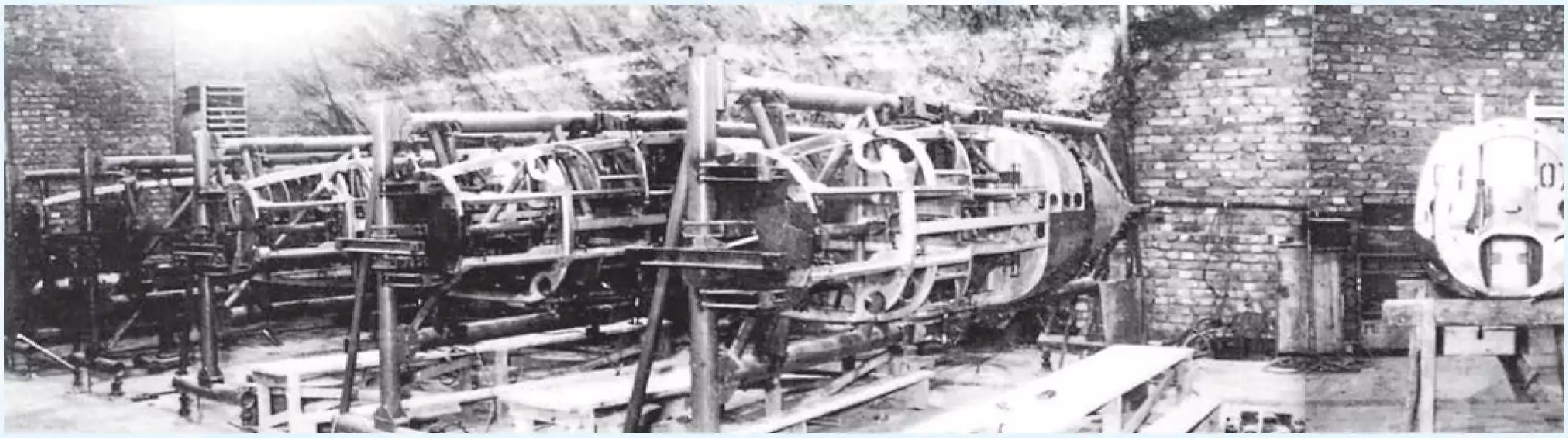
alloys. In addition, the new fighter would be propelled by a single BMW 003, a unit less powerful than even the Jumo 004. The 003 E-1 had a thrust of 1760lb-ft, the 004 B had 1984lb-ft and the Hes 011 was calculated to have 2866lb-ft in production form.

Where the 1-TL-Jäger spec called for a top speed of 1000kph (621mph), the new design needed only a more modest 750kph (466mph). And where the former needed to be capable of flying at full throttle for a whole hour, the latter only needed 30 minutes.

The catch was that the participating companies had to present their designs in time for a comparison conference in just four days' time, on September 14.

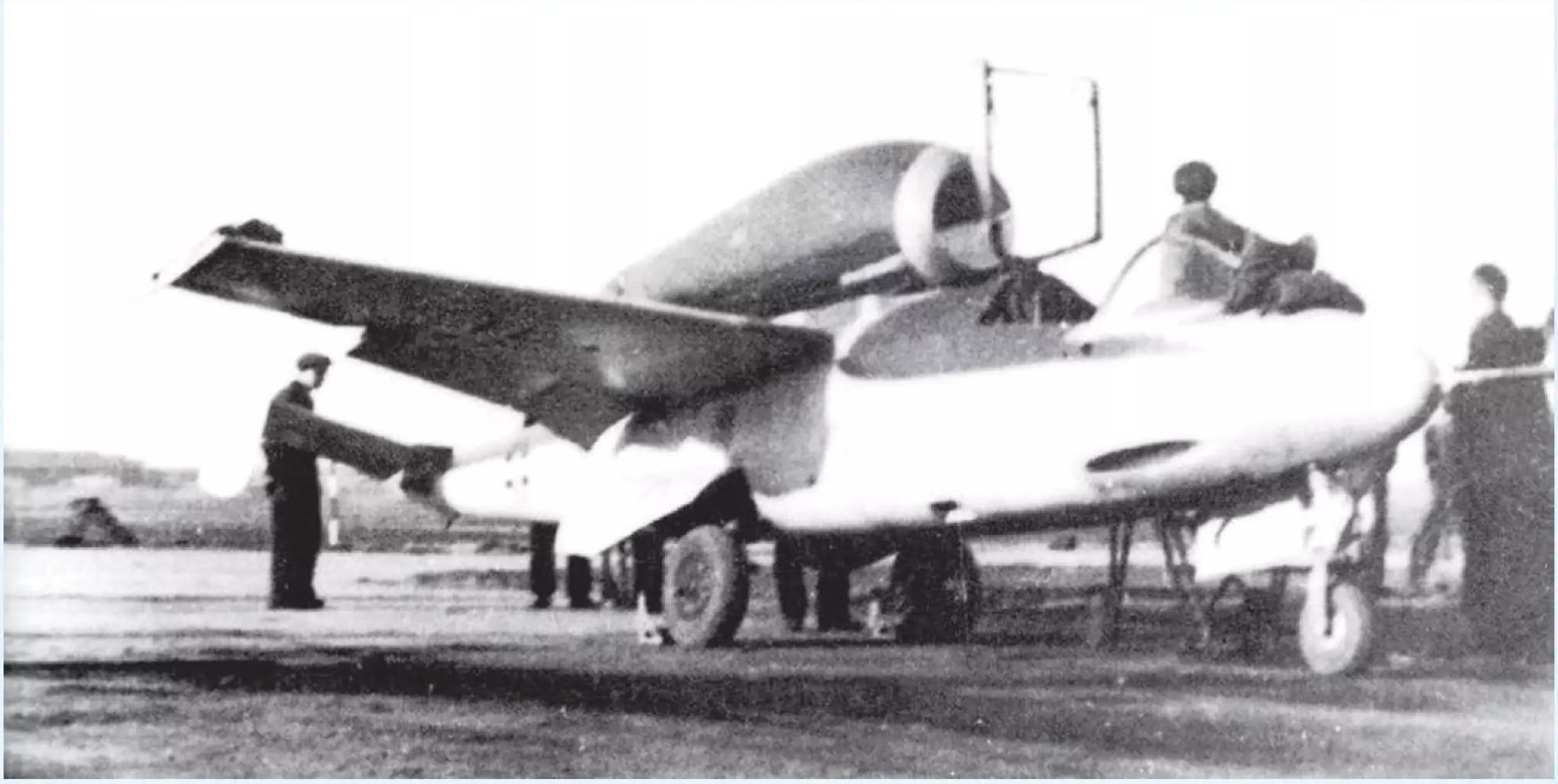
This new design was very quickly given the name 'Volksjäger' or 'People's Fighter', perhaps to differentiate it from the other single jet fighter competition since it was sent to the companies under the name '1-TL-Jäger' even though it was a different competition to the one already in progress under that title.

Just three of the companies had something ready to present in time – Arado, Blohm & Voss and Heinkel. The meeting took place in Berlin and was chaired by Heinkel technical director Carl Francke –



A row of rear fuselages awaiting components. Manufacturing delays were commonplace as essential parts took days to arrive to where they were needed and regular powercuts caused blackouts underground.

The sixth He 162 prototype, M6, rolls down the runway at the beginning of a test flight in early 1945.



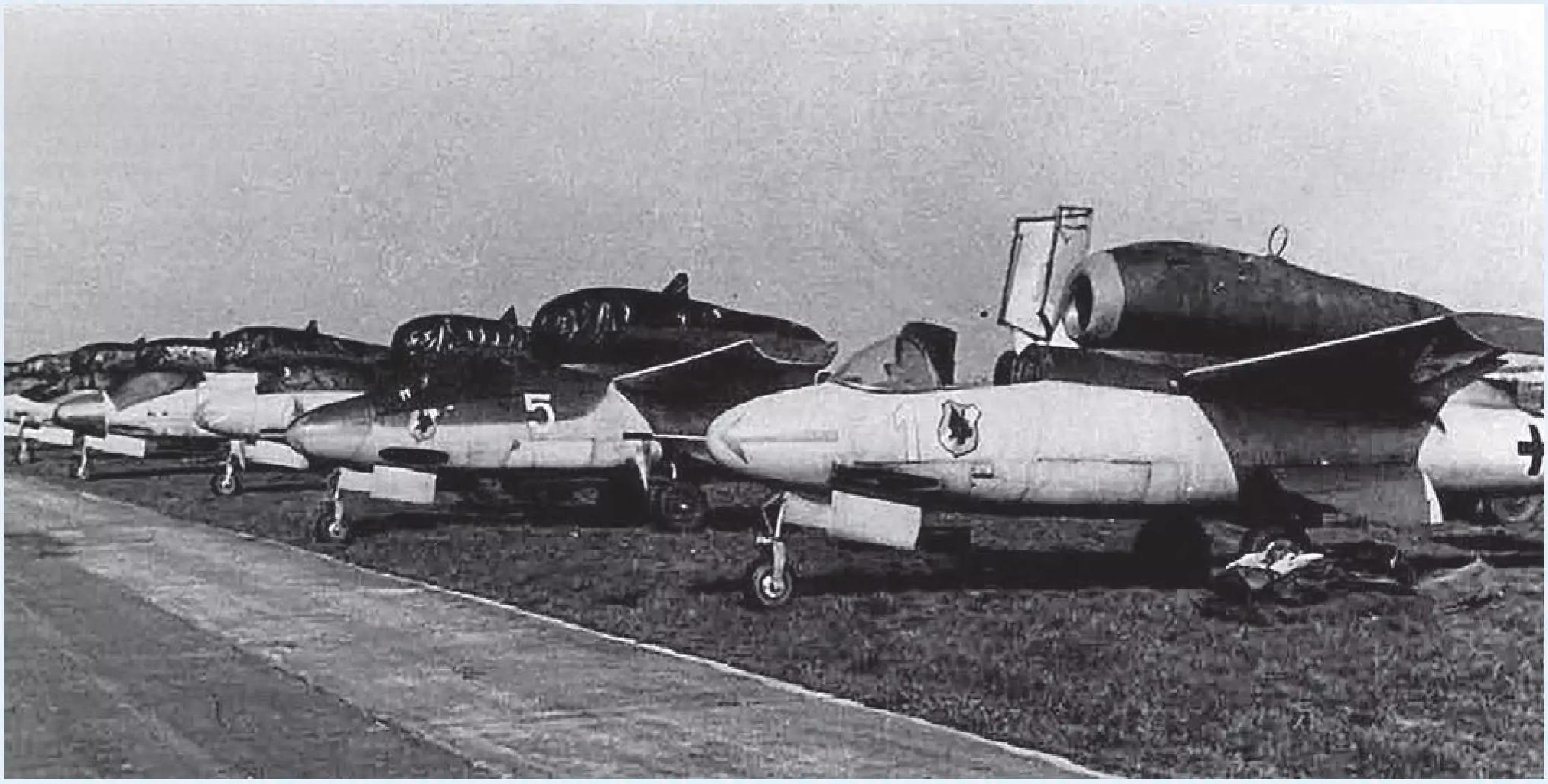
The first He 162 A-1 off the production line, W.Nr. 120001, is readied for its first flight on January 14, 1945.

who was also presenting the Heinkel design, a downgraded version of the company's original submission for 1-TL-Jäger. He gave the delegates a detailed lecture which emphasized that Heinkel had worked on its design longer than the others (Messerschmitt having refused to participate in Volksjäger, Focke-Wulf being too slow to respond, and neither Arado nor Blohm & Voss having been long-time participants in the first single jet competition) and that the spec for armament, flight time and takeoff distance could not be met so his company had decided only to meet a more modest brief, including just 20 minutes' flight time.

This was a downgraded version of the company's 1-TL-Jäger design, the P 1073. Richard Vogt, representing Blohm & Voss, was deeply unimpressed with what he saw – citing difficulties that would be caused by the design's dorsal engine position and the fact it would be difficult to get the wings off for transportation by rail. Not only that, the P 1073 only used wood for its wing – the rest was of light alloy.

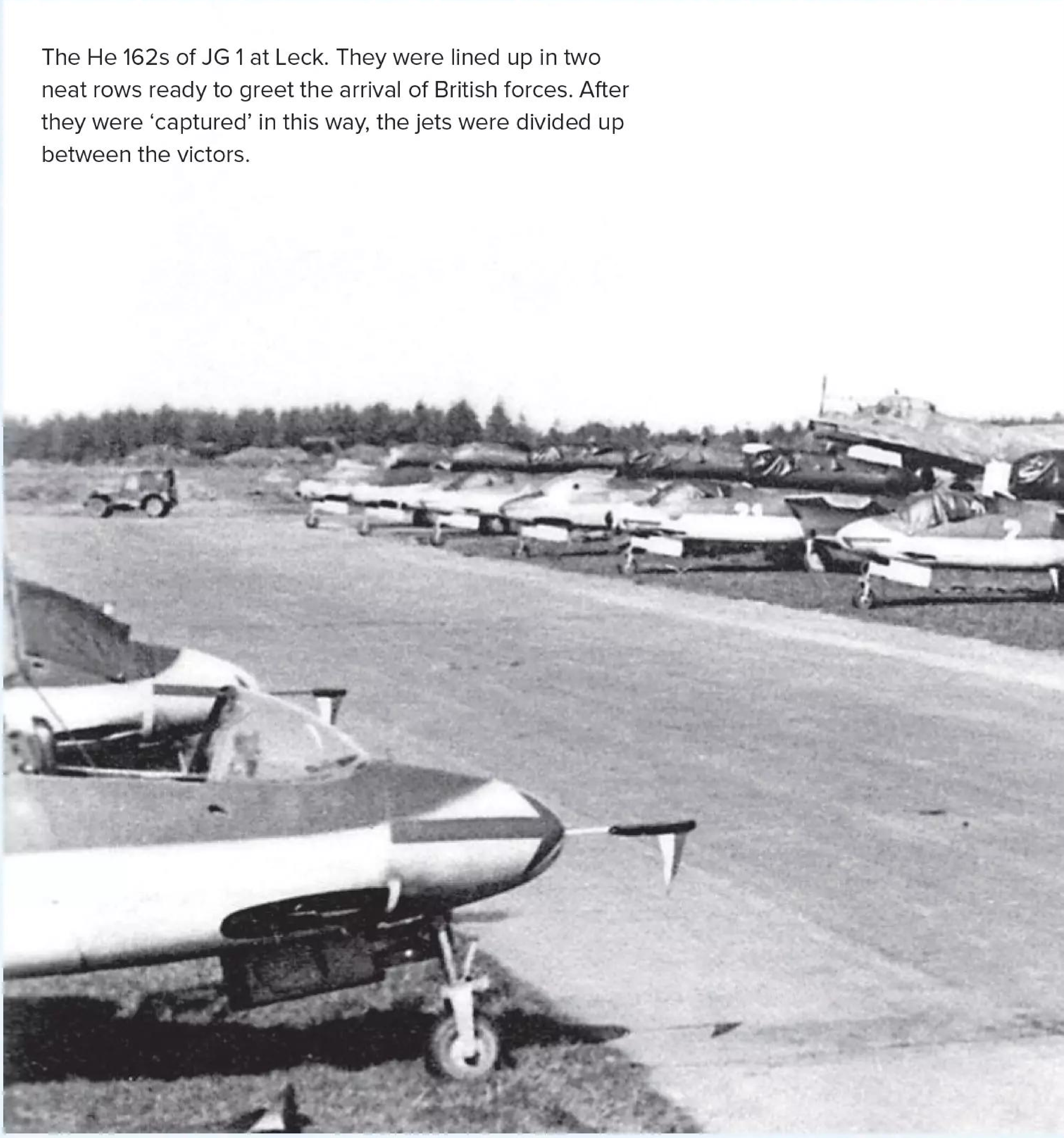
In a report entitled Aktenvermerk über Projektarbeiten für den Volksjäger und die geführten Besprechungen, or 'File notes on project work for the People's Fighter and the related meetings' dated October 12, 1944, Vogt notes that when he pointed this out and said he had a design with none of these problems, Francke "took the clock in his hand and called a time span of five minutes, which was all he could spend looking at my documents!" Blohm & Voss's design was the P 211 – an impressive-looking swept-wing design based on a simple steel structure.

Arado's design was the E 580 – a ➤



A row of He 162s lined up at Leck and ready to be surrendered to the British. In the foreground is ‘White 1’ W.Nr. 120013 – the aircraft flown by Leutnant Rudolf Schmitt on May 4, 1945, when he claimed to have shot at an RAF Typhoon ‘with effect’.

One of the pilots who flew the He 162 with JG 1 – Oberleutnant Wolfgang Wollenweber. He came close to shooting down an RAF Typhoon in the aircraft but his guns jammed at the critical moment.



The He 162s of JG 1 at Leck. They were lined up in two neat rows ready to greet the arrival of British forces. After they were ‘captured’ in this way, the jets were divided up between the victors.

small fighter with the turbojet mounted on its back like that of the P 1073 and the rear part of the cockpit canopy slightly within the engine’s intake.

The Arado design attracted negative comments but no firm decision was immediately made. The next Volksjäger meeting was on September 19, at which projects drawn up by Arado, Blohm & Voss,

One of the He 162s at Leck as seen from the rear.

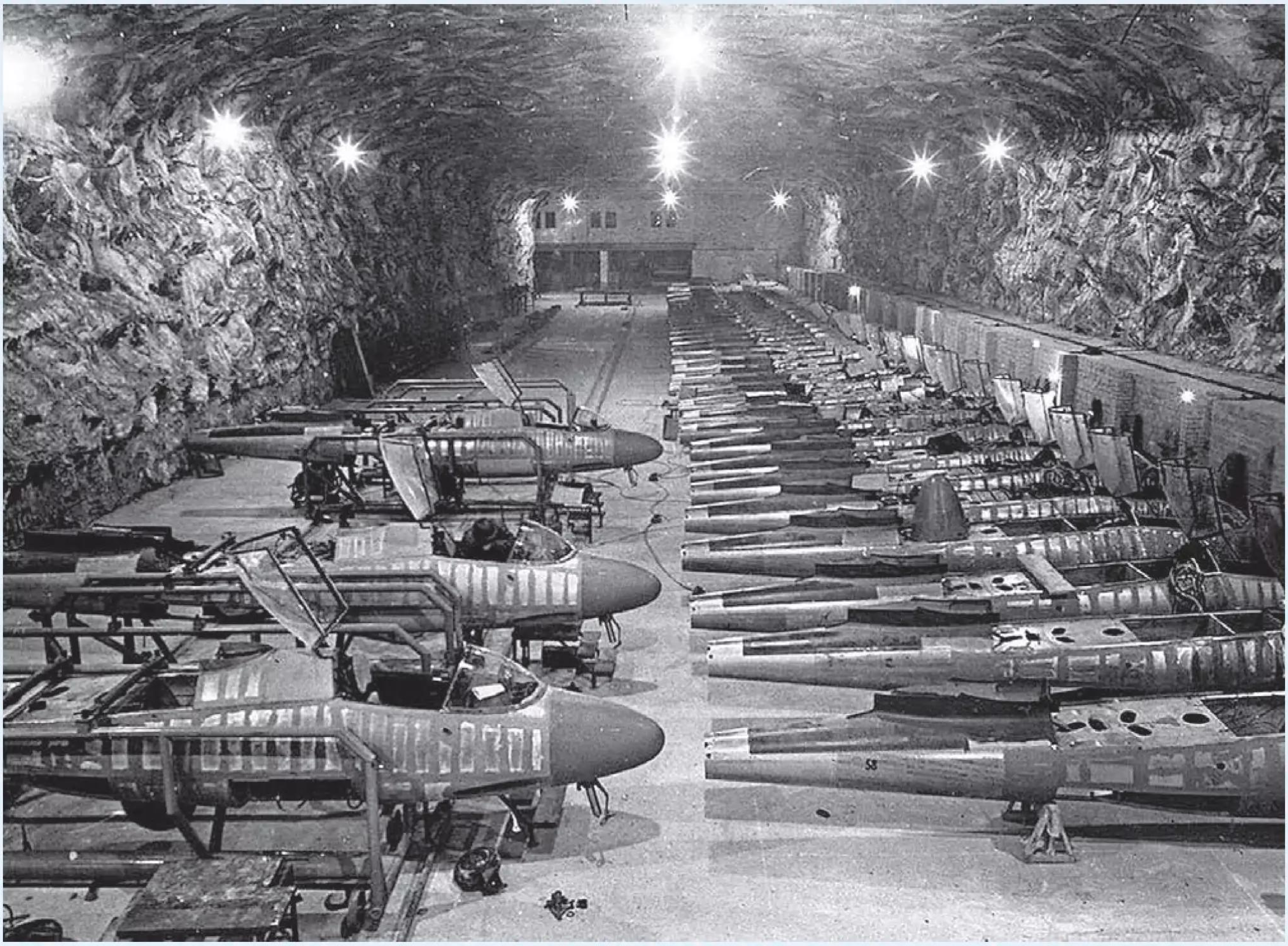
Focke-Wulf, Fieseler, Junkers and Siebel were presented. Today, the design of the Fieseler and Siebel projects is lost – though Vogt's account confirms that they were presented at the meeting – while the Junkers design is known only from photographs of a model rather than drawings.

Precisely which Focke-Wulf design was presented is uncertain since the only known Focke-Wulf Volksjäger presentation document is dated September 20 – the day after the meeting – and features a Volksflugzeug, which is somewhat similar to the P 211, a downgraded version of the company's 1-TL-Jäger 'Flitzer' design and another 'option' in the form of a turboprop version of the 1-TL-Jäger design – known in other company documents as 'Peterle'.

Again, no decision was made. But on September 30, Knemeyer announced a decision had been made and that Heinkel's He 162 would be built.

In his autobiography The First And The Last, Adolf Galland wrote: "From the beginning I had strongly opposed the Volksjäger project. In contrast to the creators of this idea, my objections were based on factual reasons such as insufficient performance, range, armament, bad conditions of sight, and dubious airworthiness.

"Furthermore I was convinced that this aircraft could not be brought into worthwhile operation before the end of the war. The terrific expenditure of labour and material ➤



After Germany's capitulation, the Allies were amazed to discover the extent of facilities dedicated to production of the Luftwaffe's single-jet fighter. This is the Junkers facility in a former salt mine at Tarthun, near Egeln.

was bound to be at the expense of the Me 262.

"To my mind all forces ought to be concentrated on this well-tested jet fighter in order to make the best of the possibilities remaining to us. If we scattered our strength once more in this last phase of the war, then all efforts would be in vain."

He went on: "My suggestion was to increase mass production of the Me 262 by having it built under licence by all aircraft factories that were not working to capacity, and further to use all these planes only for the air defence of the Reich. This earned me a sharp rebuke from Göring which ran something like this: 'This is unheard of! Now the general of the fighter arm refuses a jet fighter plane which the armament production is offering him by the thousands within a few months.'

"The Volksjäger was to represent a sort of levee en masse in the air. Incredibly schedules were fixed, astronomical production figures were planned. Göring himself became a victim of the national frenzy with which the planning of the Volksjäger had infested almost everyone connected with air defence.

'Hundreds! Thousands! Umpteen thousands!' he cried. 'Until the enemy has been chased back beyond the borders of Germany.'

Building the people's fighter

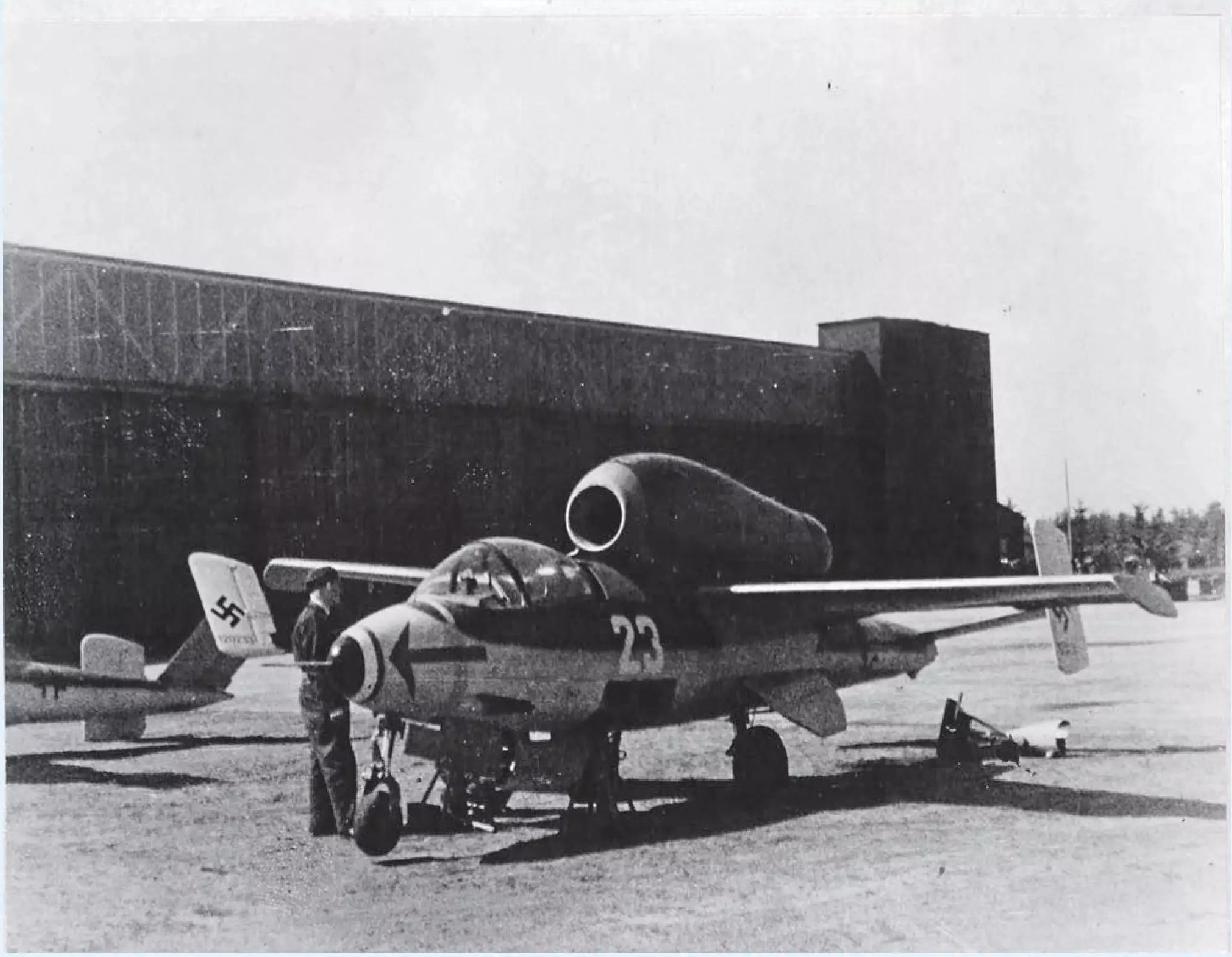
Work on building the first prototypes began on October 25, 1944 – 10 days before the last of the detailed construction drawings had even been completed. The He 162 was to be tested with both 30mm MK 108 and MG 151/20 cannon, designated the A-1 and A-2 versions respectively.

It was also to be fitted with a BMW 003 jet engine, an undercarriage derived from that of the Bf 109 to cut production time and cost, and a Heinkel device first seen on the He 219 night fighter – the world's first operational military ejection seat.

The He 162 M1 (V1) was finished and ready to fly on December 1, 1944. Its maiden flight came on December 6. Four days later, during another test, it was destroyed when aerodynamic instability led to a fast and unrecoverable roll which exceeded structural limits. The leading edge of the starboard wing came off and test pilot Gotthold Peter was killed in the ensuing crash.

The second prototype, He 162 M2 W.Nr. 200002, first flew on December 22. Another eight prototype and pre-production machines followed in quick succession and were soon used to test everything from landing gear and armament to vibration and directional snaking. Meanwhile, Heinkel's factories were gearing up for full production – a quota of 30 He 162 A-1s was expected by the end of January 1945.

There were five facilities involved: EHAG (Ernst Heinkel AG) Nord Rostock-Marienehe, EHAG Süd Wien-Schwechat, Junkers' Bernburg factory and the underground facilities at Hinterbrühl, codenamed 'Languste', and Mittelwerk Nordhausen.



Heinkel He 162 A-2 W.Nr. 120230 'White 23' is believed to have been the personal aircraft of JG 1's commander, Oberst Herbert Ihlefeld. It was captured at Leck by the British but then turned over to the Americans.

All of them employed slave labourers – some 22,500 in total, including 8000 at Rostock alone, accounting for 55% of the work force.

During an inspection of the production lines on January 27 it was determined that so far, two production machines had been flown, 12 had had engine tests completed, 58 fuselages were complete and another 71 were nearing completion.

A second test pilot was killed on February 4, 1945. Oberleutnant Georg Weydemeyer crashed the sixth prototype during its 11th test flight. It was found later that there appeared to have been insufficient glue used on the plywood skin covering the ribs of the tail unit.

The first five production machines were ready to go by February 9 – work at Heinkel's factories having been slowed by blackouts resulting from the damage caused to Germany's electrical power infrastructure during heavy bombing.

It was decided in January that rather than form a new Luftwaffe unit to operate the He 162, an established unit should be converted to it, and JG 1 was chosen. I./JG 1 was pulled back from the front line on February 6 for this purpose and its 23 surviving Fw 190 A-8s and A-9s given to II./JG 1 to replace losses it had suffered.

The Gruppe, now minus its aircraft, transferred to Parchim, 50 miles south of Rostock, on February 9. No He 162s were immediately available, so I./JG 1's pilots and crew began familiarisation training with EHAG personnel on February 12.

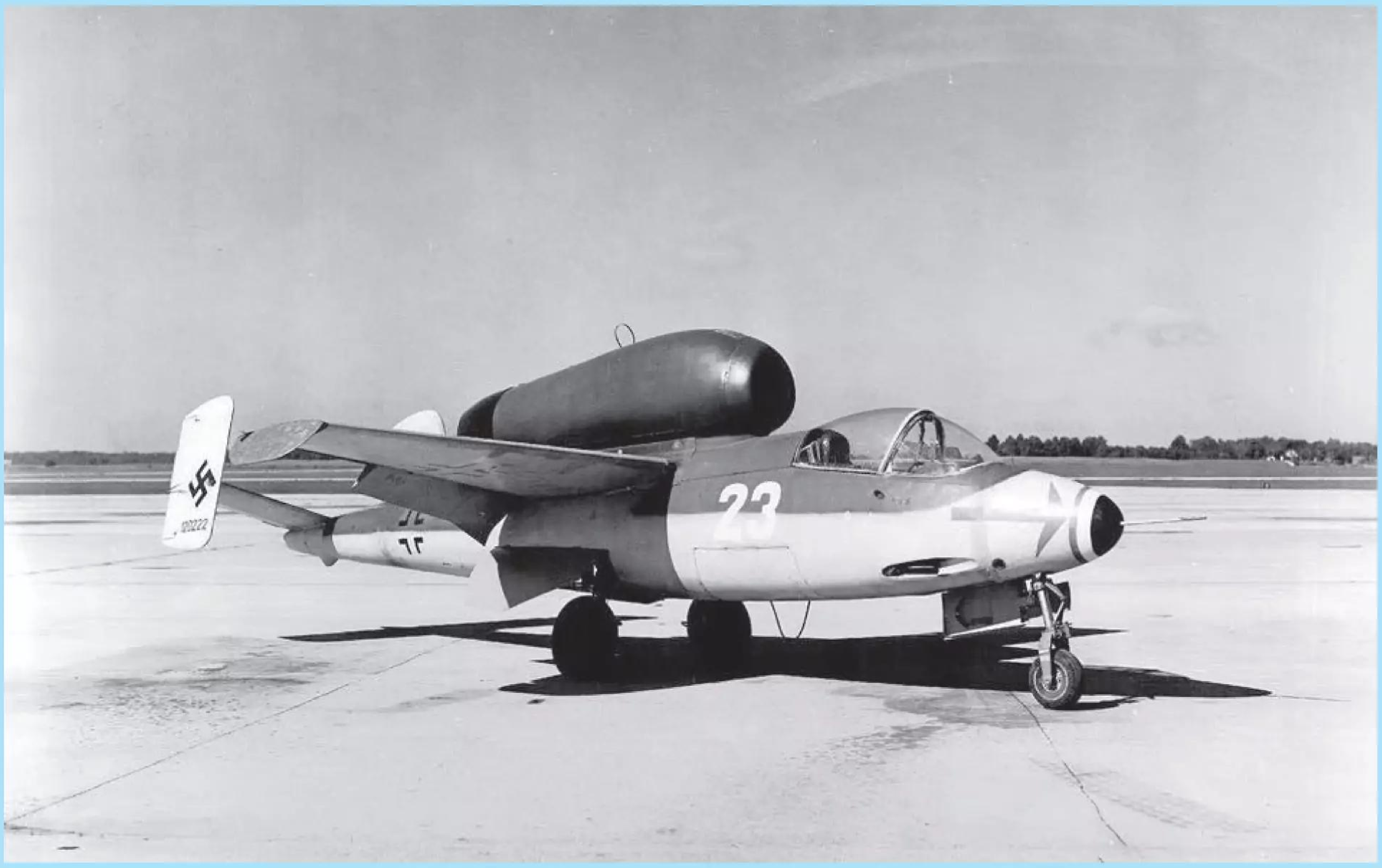
An Auffangsstaffel or 'collection squadron' from 2./JG 1 was sent to Heidfeld – the airfield at Heinkel's Rostock headquarters – on February 27 to pick up a single aircraft brought over from Junkers at Bernburg. This was He 162 M19 W.Nr. 220002.

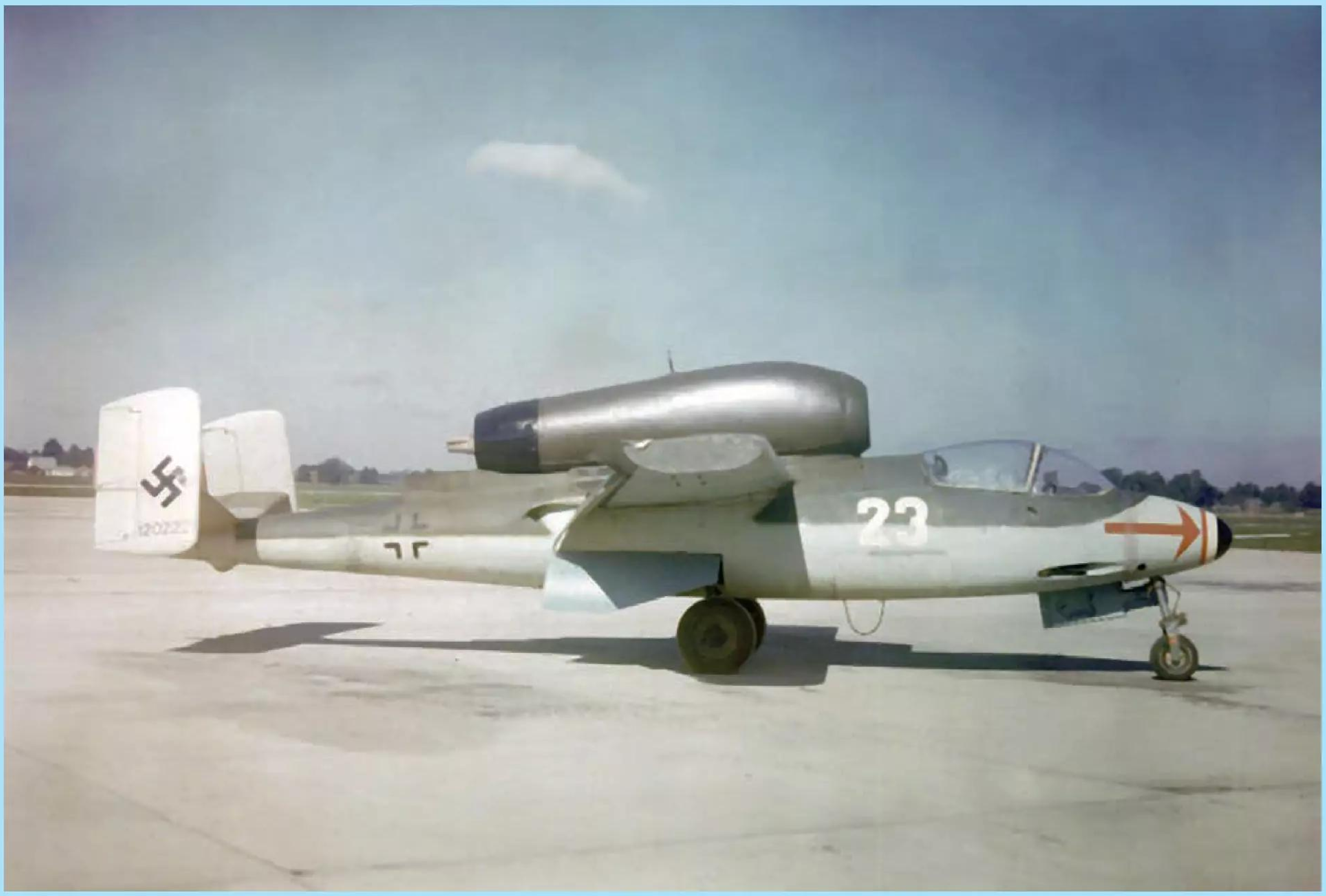
A second group of pilots, from I./ JG 1, arrived at Rostock on March 4 to collect more aircraft but none were available and were told they too would have to make do with M19.

A third pilot was killed in a He 162 on March 14, when Unteroffizier Tautz of 2./ JG 1 hit a stack of barrels while attempting to land M19. The aircraft span into the ground and Tautz, thrown clear of the cockpit, suffered fatal injuries.

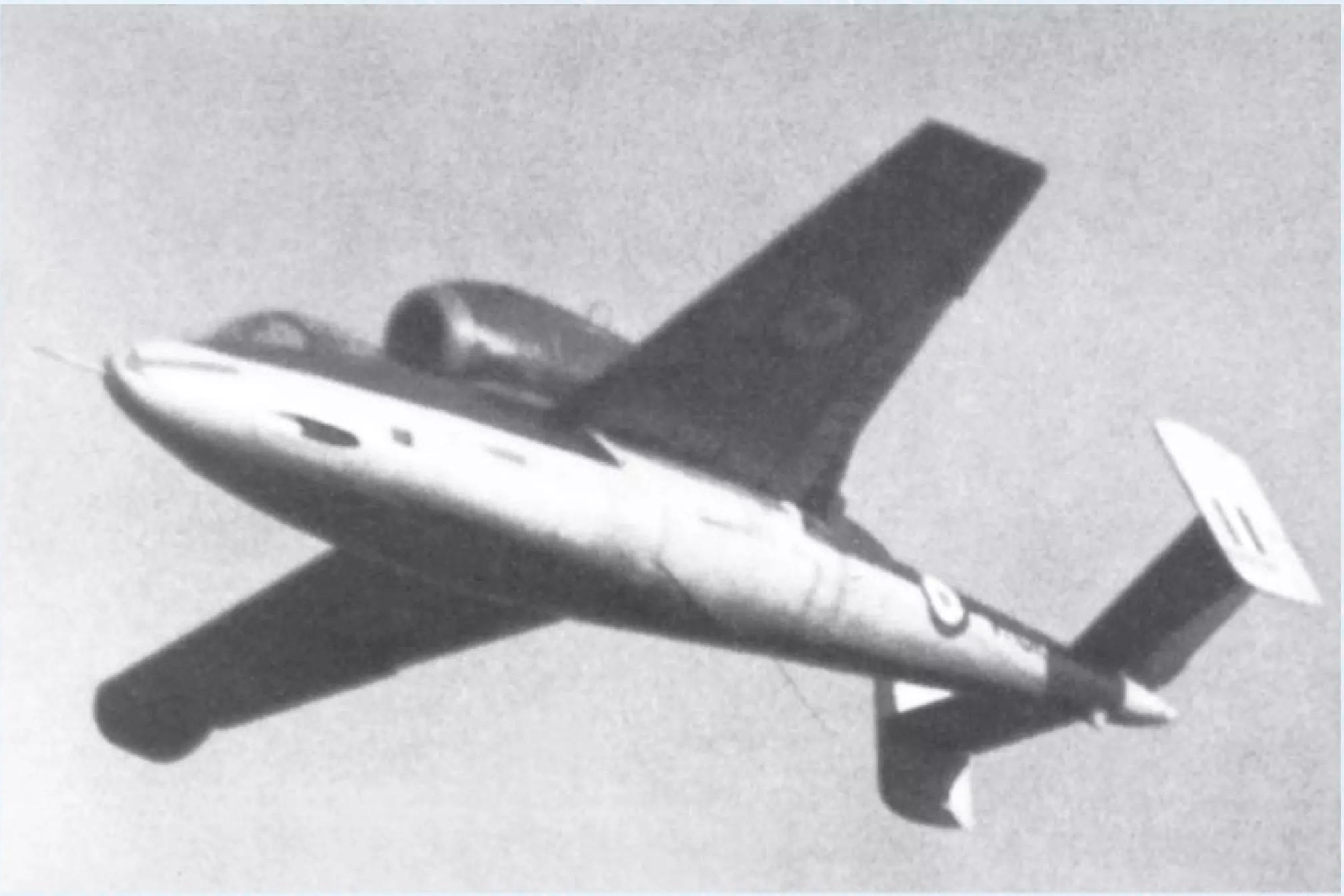
Now there were no He 162s available for conversion training. On March 26, it was announced that JG 1 would relocate in readiness to receive completed aircraft leaving the Junkers production line. A group of 15 pilots from 3./JG 1 moved to Lechfeld but there was still nothing available to fly.

On the 27th, Hermann Steckham attempted to take off on a test flight at Bernburg in production He 162 W.Nr. 310001 but suffered engine failure which resulted in the aircraft coming down hard. It was a total write-off and Steckham was badly injured. ➤





After its transfer to the US, 'White 23' was given Foreign Equipment number FE-504 and an erroneous new tail number, 120222, and after undergoing a few tests was shown as a static display at air shows across America. It is now in storage at the National Air and Space Museum in Washington DC.



A rare view of the He 162 in flight – in this case captured He 162 A-2 W.Nr. 120098, which was given the serial VH513 in British service. It is pictured here at RAF Farnborough in mid to late 1945.

I./JG 1 was told on March 31 that it would have to move to Leck at the northernmost extreme of Germany. On the same day, with JG 1 personnel now scattered across Germany, He 162 deliveries finally began.

Simultaneously, as the enemy advanced from east and west, evacuation of He 162 production facilities began. EHAG Süd at Wien began shutting down on April 1.

He 162 'White 1' was flown by 2./JG 1's Leutnant Rudolf Schmitt for 20 minutes at Parchim on April 3. Having joined the Luftwaffe as an 18-year-old in August 1943, he initially trained at Luftkriegschule 2 in Berlin before moving to Flugzeugführerschule C6 in Kolberg. In May 1944 he was transferred to 2./JG 107, which was stationed in Hungary, and then 5. and 6./JG 108, based at Wiener-Neustadt. Finally, on February 16, 1945, he joined 1./JG 1, switching to 2./JG 2 shortly thereafter.

Unteroffizier Helmut Rechenbach of 2./JG 1 crashed and was killed while ferrying a He 162 from the factory on April 6, bringing the aircraft's death toll to four.

By April 12, 1945, I./JG 1 had 16 He 162s at Parchim, of which 10-12 were serviceable. Two days later, one of the unit's most experienced pilots, Feldwebel Friedrich Enderle, was killed when his He 162 came down shortly after take-off at Ludwigslust and exploded.

The following day, April 15, I./JG 1 began its delayed move to Leck. Flying He 162 'White 7' from Ludwigslust to Husum, a fuel stop along the way, Leutnant Schmitt encountered a Spitfire at 3.40pm but used his aircraft's speed to avoid an engagement, as he had been ordered.

On April 17, Unteroffizier Josef Rieder had a problem with his He 162's flaps on take-off and crashed, suffering serious spinal injuries. The following day Unteroffizier Wolfgang Hartung of 2./JG 1 came down during another transfer flight and was killed in the crash – the sixth He 162 fatality.

Last stand at Leck

With I./JG 1 now settling in at Leck, it wasn't long before they were called into action. A report of enemy aircraft in the vicinity at 12.20pm resulted in a pair of He 162s, piloted by Feldwebel Günther Kirchner and Leutnant Gerhard Stiemer, being sent up.

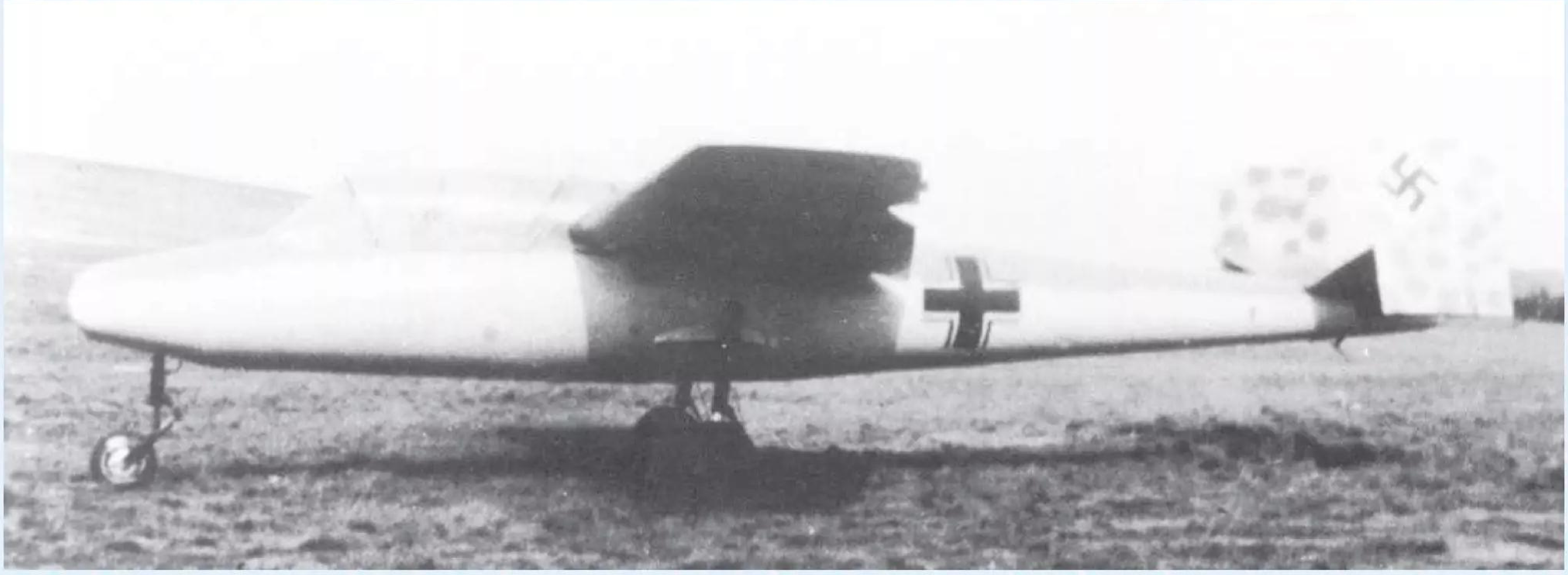
Stiemer reported that just as they left the runway, two enemy fighters flew right over them. Within seconds, Kirchner had activated his ejection seat – but he was still barely off the ground and although the device performed correctly, there wasn't enough time for his parachute to open and he fell to his death.

All Stiemer could do was evade the fighters, which he believed to be American P-47 Thunderbolts. When he came in to land, his undercarriage failed to deploy and he was forced to make a belly landing.

These enemies were, in fact, Hawker Tempests of 222 (Natal) Squadron.

Flying Officer Geoffrey Walkington later reported: "I was flying as Blue 1 strafing Husum airfield when I sighted an aircraft flying in a northerly direction away from the aerodrome. I immediately broke off my attack on the airfield and chased this aircraft which was camouflaged mottled green with a yellow underside and appeared to have twin fins and rudders and one engine.

"The nose of the aircraft had a drooping appearance and the wings (plan view) resembled those of an Me 109. Due to my loss of speed on turning the enemy ➤



Perhaps the only completed He 162 S unpowered training glider, built by the NSFK to a Heinkel design and reportedly test-flown on March 1, 1945.

aircraft pulled away to about 1500 yards. Having recognised this aircraft as hostile by its camouflage, I gave chase, but was unable to close, my IAS being 360mph.

"The enemy aircraft did a 360 turn to starboard which I followed, turning inside. During my turn I managed to close to 1000 yards. Being unable to gain further I trimmed my aircraft carefully and, allowing about three quarters of a ring above the enemy aircraft, I fired short bursts.

"The enemy aircraft then pulled up through cloud which was eight tenths at 3000ft. I followed through a gap and passed the enemy aircraft spinning down out of control from about 3500ft. I then watched the enemy aircraft explode on the ground near Husum aerodrome."

The accounts of the action differ significantly, but the date, time and location matches. It was the first combat loss of a He 162. It would not be the last.

April 20 saw four He 162s dispatched to intercept RAF Typhoons strafing targets in the Leck area. 'Yellow 7' and 'Yellow 11' took off first, followed by 'Yellow 1'. 'Yellow 3', piloted by Oberleutnant Wolfgang Wollenweber, was delayed by 10 minutes due to engine problems.

Once he was in the air, he heard that the other three had been unable to locate the Typhoons but when he spotted a burning bus below he realised he must be on their trail. Pressing on, he found the British attacking Husum.

Having already released the safety switch on his cannon, Wollenweber lined up the last Typhoon and pressed the trigger but nothing happened. He lined up the second machine and tried again but still nothing. In frustration, he shot over the Typhoon barely 5m from its canopy and climbed steeply away.

Spotting him at last, the Typhoons broke off their attack and tried to follow but were rapidly outpaced. Wollenweber flew home.

That afternoon, Leutnant Schmitt had cause to use his machine's ejection seat after suffering a malfunction during a familiarisation flight and yet another pilot, Unteroffizier Gerhard Fendler, was killed during a ferry flight. This brought the total number of non-combat related He 162 deaths to seven.

Another pilot, Feldwebel Erwin Steeb, was forced to eject due to a mechanical failure on April 21. Feldwebel Rolf Ackermann of 3./JG 1 was killed while attempting to land another new He 162 after a ferry flight on April 23 and the following day, the commander of II./JG 1, Hauptmann Paul-Heinrich Dähne, was also killed.

Dähne, new to the He 162, encountered a common problem – when accelerating into a turn, the jet wash from the engine forced the rudder to jam. This made the aircraft uncontrollable and at low level the only thing to do was eject.

It is believed that Dähne did attempt to eject but neglected to jettison the canopy of his machine first – not an automatic process. This resulted in him smashing his head against the inside of the canopy, probably killing him before his He 162 hit the ground.

On April 25, Leutnant Schmitt took off in 'White 5' to intercept a low-flying British de Havilland Mosquito at 11.20am but there was no engagement. Two pilots, Unteroffizier Helmut Rechenbach and Fähnrich Emil Halmel, were injured when their He 162s both crashed during ferry flights on April 26. Three more pilots crashed their He 162s during ferry flights on April 30. One of these, flown by Leutnant Hans Rechenberg of II./JG 1, was shot at by a Spitfire before it went down near Wismar.

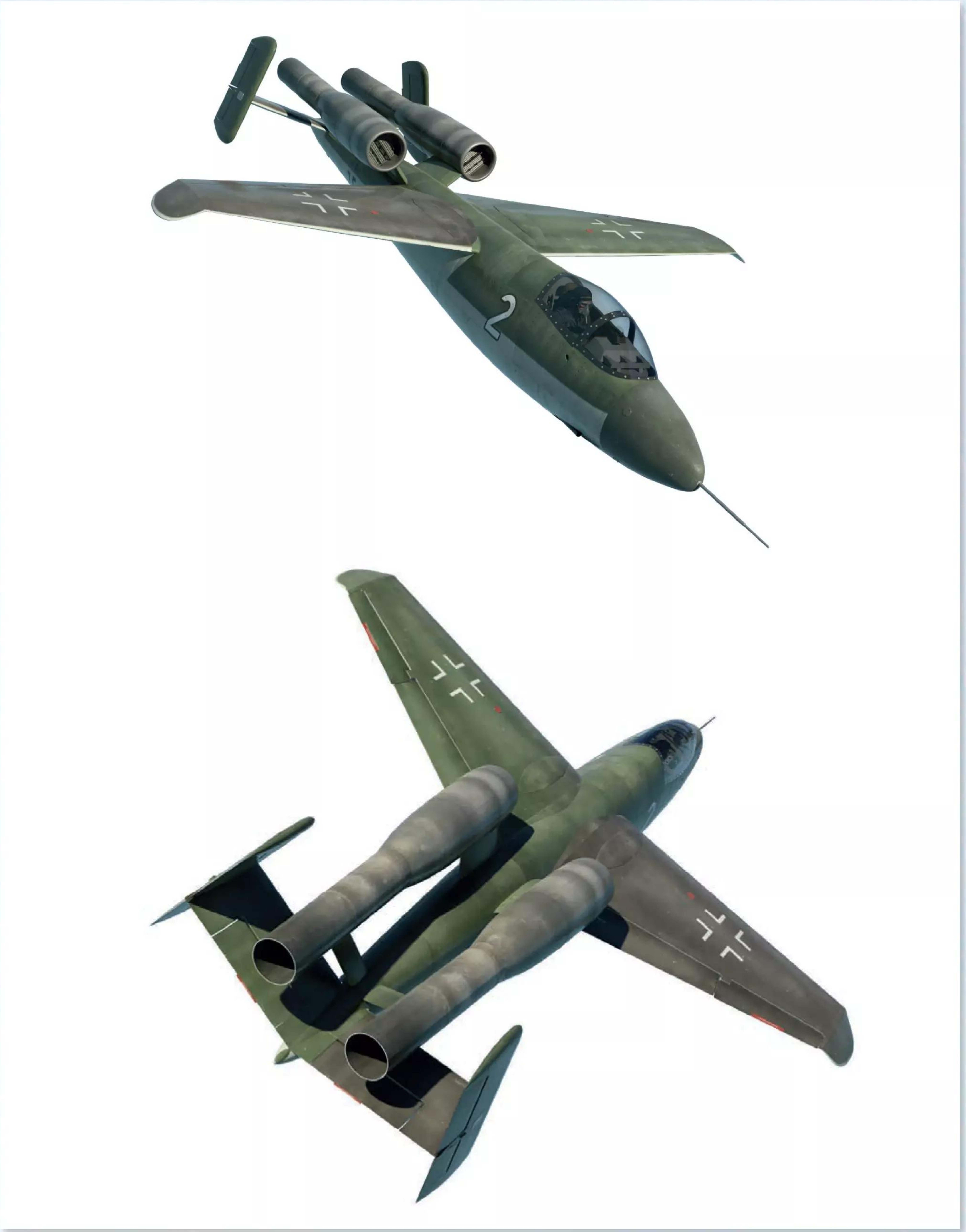
On May 1, Oberleutnant Wollenweber and his men had to detach the final two He 162s from their construction jigs at Rostock before they could be ferried to Leck. After attempting and failing to get them to work, Wollenweber, two other pilots and an engineer were forced to escape the airfield in a Fieseler Storch as the advancing Russians threatened to overrun the facility.

JG 1 now had around 45 He 162s stationed at Leck but since the airfield was one of the few places left in Germany where aircraft could operate relatively freely, it was now becoming crowded with a variety of other units and aircraft.

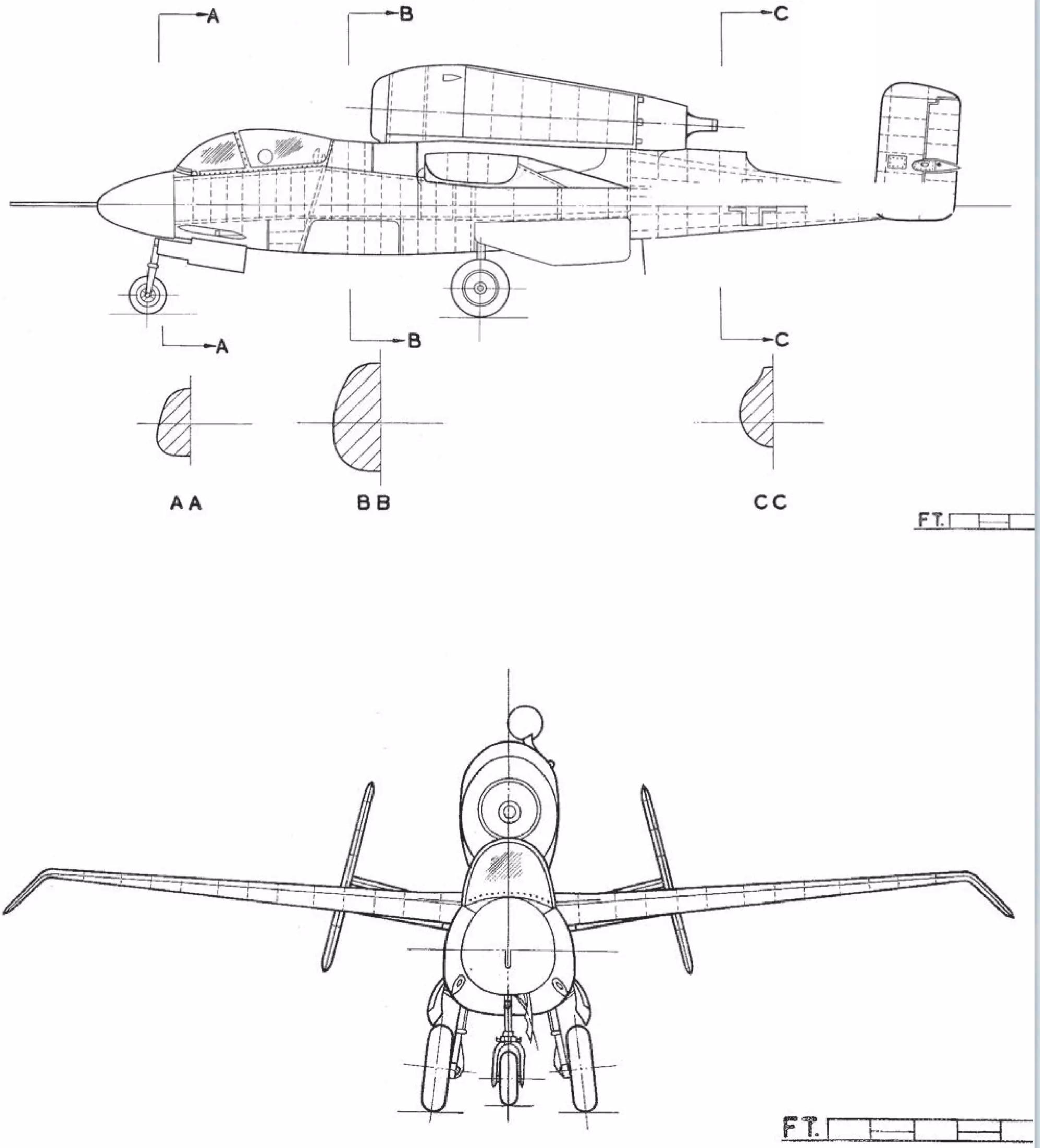
On May 4, the war diary of JG 4 recorded: "Orders arrive at 0200 – the serviceable aircraft must fly on, either to Norward or the Protectorate, to avoid being captured by British troops. Take-offs should be completed by 0600. The three Bf 109s of the former III./JG 4 are to remain at Leck. German forces in north Germany have signed a surrender, capitulating to Montgomery.

"It is forbidden to fire at any low-flying aircraft. At the same time no further take-offs are authorised. A lone Spitfire circled the airfield. The war is over! The Helferinnen Dobner and Augsen arrived on the airfield after an incredible journey. They are the only two service-women from their convoy that have been able to reach us here at Leck."

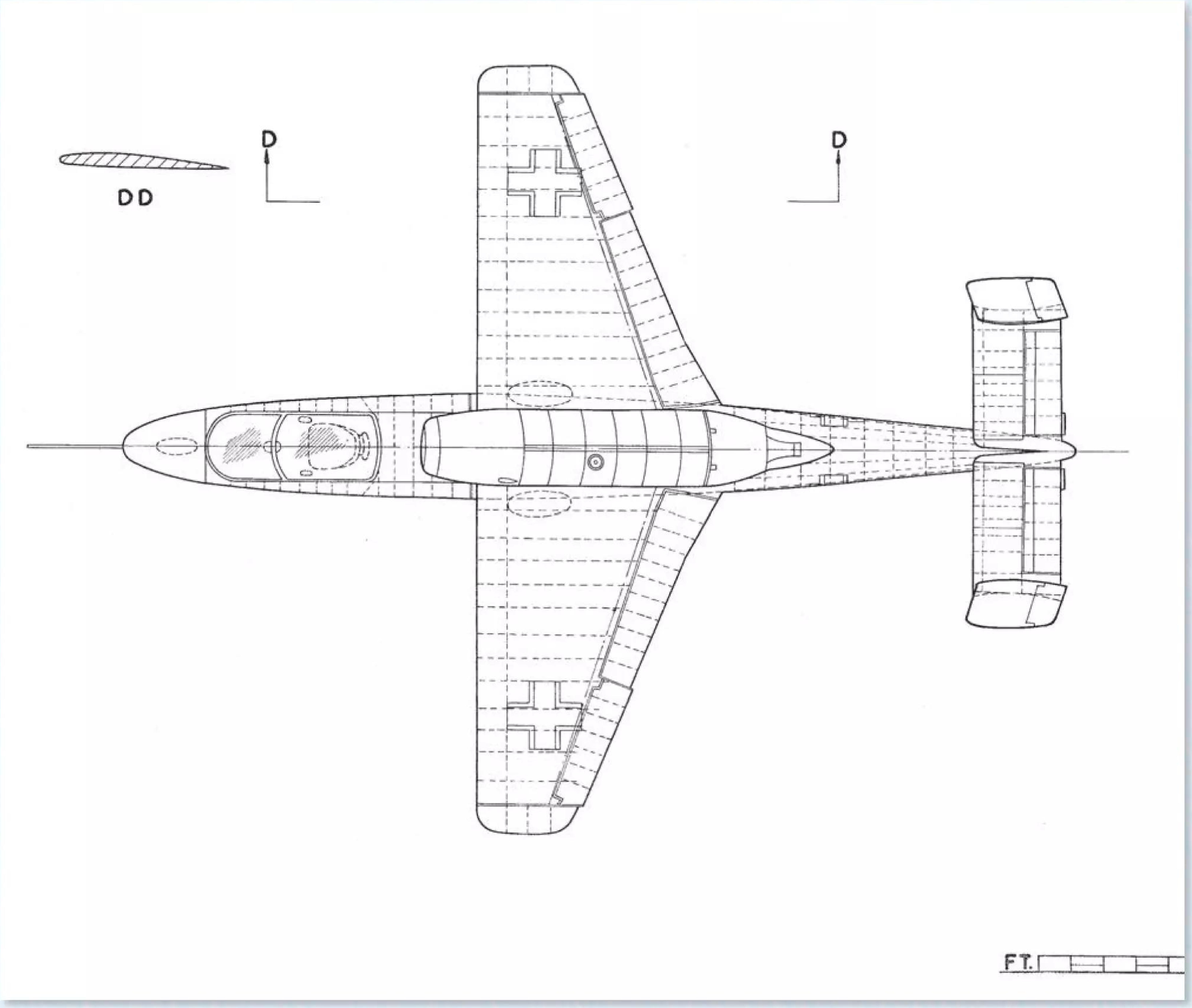
Seemingly undaunted by all this, Leutnant Rudolf Schmitt took off in He 162 A-2 'White 1' at 11.38am and flew south. He ➤



A number of different 'project' versions of the He 162 were proposed, including a variant powered by a pair of Argus As 014 pulsejets. Although the use of these controversial engines had been rejected earlier in the war due to the severe vibrations they produced when positioned under an aircraft's wings, it was later believed that positioning two close together would cancel out this undesirable attribute. *Art by the late Gino Marcomini*



The He 162 was 9.05m long with a wingspan of 7.2m. By comparison, a Bf 109 G-6 was 8.95m long with a 9.925m wingspan and wing area of 16.05sqm.



Top view. The aircraft's wing area was just 11.16sqm.

was attempting to intercept RAF Typhoons that had been reported in the area and it wasn't long before, at 11.45am, he found an Allied aircraft south-east of the airfield at Husum.

During a brief encounter, Schmitt opened fire and later recorded in his logbook: "Typhoon wirksam besschossen" or 'Typhoon fired on with effect'. This would seem to indicate that Schmitt believed he had fatally damaged a Typhoon fighter-bomber, though had not necessarily witnessed its final destruction.

The only corresponding Allied loss in about the right area and at anything like the right time was that of Flying Officer Tom M Austin's Hawker Tempest JN877 SA-Y. Austin, of 486 Squadron, crash-landed after suffering what he described as engine trouble in the Satrup area – though the 'trouble' did cause it to blow up.

Satrup was a good 20 miles east from Husum and perhaps seven or eight miles north of it. In addition, Austin is believed to have gone down at around 7.10am. Nevertheless, in the confusion of those final days of the war, the possibility remains that Austin was indeed the one and only combat victim of a He 162.

It is believed that, in the end, some 171 He 162s were built, with 116 actually being delivered. The Luftwaffe received 56 of these before production finally collapsed at the end of April. At least nine men had been killed in flying accidents involving the He 162 – whether due to a failed airframe, a failed engine, inherent design flaws or simply the sheer trickiness of piloting the delicate little aircraft.

Whether Rudolf Schmitt actually managed to shoot down an Allied aircraft with a He 162 may never be known for certain. ■

For more, see:
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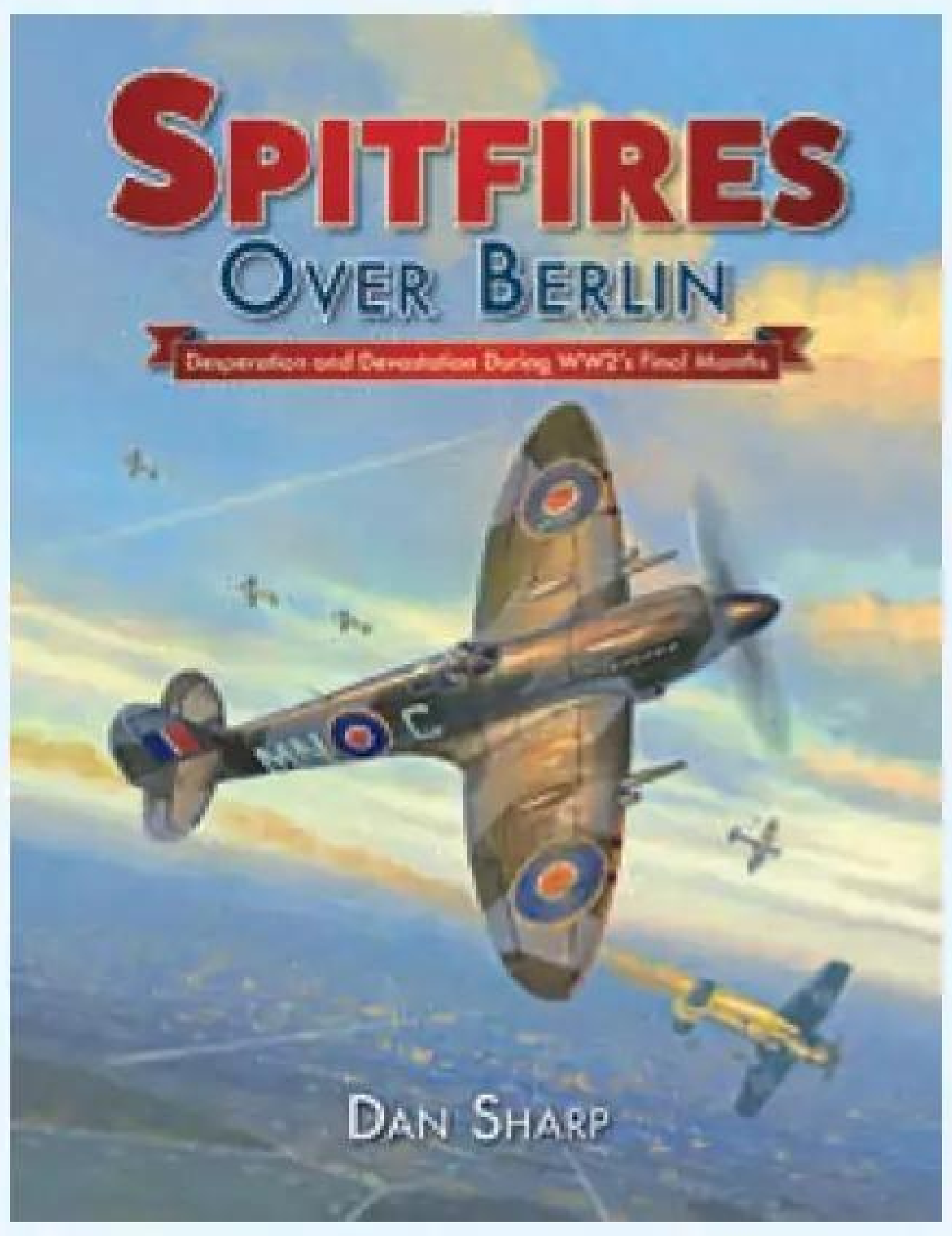

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The F-16 in the Cold War

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Shaped by Vietnam War experience and embodying the latest fighter design concepts, the F-16 was destined for service on the cold war's front line from the very beginning, writes Bertie Simmonds...

The sharp end of the USAF during the Cold War included the F-15A, F-16A, A-10A and the long-in-the-tooth F-4E Phantom II.

Exercises like Operation Bright Star in Egypt in 1982 often threw up interesting formations. Here an F-16 and A-10A fly over the pyramids alongside a MiG-21 and MIG-15 trainer.

Looking back now to the beginning of the1980s, it's hard to believe that the USAF had been enjoying a few years of peace – albeit under the dark cloud of the Cold War.

Following on from the end of the Vietnam War, USAF squadrons would enjoy a long period of relative calm, before the start of Operation Desert Shield and later Desert Storm in 1990/91. It was left to other air forces to show the Viper's bite, but for a young USAF pilot, the tip of the spear for deployment had to be USAFE – the United States Air Force in Europe.

The F-16 – despite being conceived as a lightweight, clear-weather dogfighter – was going to its own phoney war in Europe, loaded with bombs, where the rain, clouds and clag were about as far from the gin-clear skies of the USA as you could get.

At the end of 1978 it was announced that the 50th Tactical Fighter Wing would adopt the new F-16A fighter but first would come a series of tests to evaluate the new aircraft on the continent. A number of F-16s from the full-scale development batch were flown to Hahn Air Force Base during 1979 to embark on what was to become known as the European Test and Evaluation programme.

The first four European nations to buy the F-16 were already learning hands-on how the aircraft performed in the demanding conditions of Northern Europe. It made sense then that the ET&E aircraft used the existing expertise, travelling from Hahn to Norway (for cold weather trials), to Denmark, and even to RAF Lakenheath as well as other USAFE bases. More than four months of testing, as well as some dissimilar air combat training with RAF Alconbury's 'Aggressor' F-5E Tiger IIs.

Although not from the USAFE, a detachment of seven aircraft from the 388th TFW deployed to RAF Lossiemouth, Scotland, to take part in a tactical bombing competition on June 24, 1981. The results were staggering. The 388th TFW team scored a record 7831 from a possible 8000 points. In second was an RAF Jaguar team that scored 6401. It was reported that all ordnance hit the correct ground targets, while the team scored an 86-0 kill ratio against the defending BAC Lightnings and McDonnell Douglas F-4 Phantoms.

Unsurprisingly 388th pilots took first and second places overall in the Sir John Mogg Bombing Trophy (Captain Roger Riggs and Captain Wayne C Edwards respectively) which was awarded during the deployment. Edwards was particularly excited by the potential of the F-16. He said at the time: "The machine, now wearing its operational colours of mottled grey, looked devastatingly effective. I found myself thinking that if the airplane could do half of what it looked to be capable of, it would be unreal." Riggs and Edwards and the 388th had given the F-16 a stunning start in Europe and one which paved the way for the arrival of the first Block 15 F-16A at Hahn on December 29, 1981. The Viper was finally in Europe.

The 50th TFW had been based at Hahn Air Force Base since 1959 and ➤

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The 1980s saw the General Dynamic F-16 mature as a combat aircraft.

Returning to its shelter after a 'Certain Sentinel' mission in 1986 is this F-16A from the 10th Tactical Fighter Squadron.

The successful USAF team were a resounding success at the RAF Lossiemouth bombing competition in 1981.

before the F-16 arrived, it was equipped with the battle-proven McDonnell F-4E Phantom II which it had been using for the previous 12 years. The switch from a two-seat aircraft to a single-seat would take some adaptation. The main roles for the new General Dynamics aircraft would be conventional attack, nuclear strike and air-to-air, so it was understandable that many pilots would come to the 50th TFW with a strike background, such as from the General Dynamics F-111 – another two-seater.

Training was intense and deployments were made away from the overcast of central Europe to the likes of Zaragoza, Spain. Problems with their new mounts were also found, as they were in the fledgling F-16 units during the early 1980s. These issues included difficulties with the Westinghouse APG-66 with clutter against air-to-air targets (especially in mountainous terrain) problems with the afterburner suffering a 'blow out' thanks to fuel flow issues, landing issues with such a relatively 'lightweight' aircraft and some problems with the flight control system.

Eventually all three squadrons: the 10th, 313th and 496th Tactical Fighter Squadrons were operationally ready in April 1983. Retired Lieutenant Colonel Dana Purifoy had come from the F-111E community and he recalls the challenges flying the – still relatively simple – F-16A in Europe. He says: "Initially I was surprised we were doing more air-to-ground work than air-to-air in the F-16. For F-111 pilots flying air-to-ground missions in Europe, the F-16 seemed like a

The USAF crews took the overall award and proved that the F-16 could bomb and fight its way to and from the target.

step backward: I thought I'd traded one bad deal with an airplane I thought had at least some possibility of survival in for an airplane I thought had zero possibility of survival."

In the F-111E, Purifoy had the benefit of an all- weather radar and an automated terrain-following system that enabled him to fly at 200ft above the ground: at night or in bad weather (or at night and in bad weather) and still hit a target. Meanwhile the ex-F4E drivers were having to juggle using the new radar themselves (having lost their Weapon Systems Officers or WSOs) and were bemoaning the lack of a radar-guided missile for longer-ranged intercepts. And the aircraft's much-vaunted agility was not much of a bonus when weighed down with an air-to- ground load either – pilots reckoned that with tactical ordnance hanging of the plane, the F-16 was no more agile than an F-4.

Other air forces in Europe were finding the same issues with the basic F-16A and Bs. One Belgian pilot confessed that – in reality – things hadn't changed much and that a lack of radar-guided missile actually meant that the new F-16s were less capable than the French Air Force's Mirage F1-C that they were 'playing' with in exercises. "The early F-16As were just day fighters, in the same mould as the Mirage V and F-104 and in bad weather we were grounded…"

Hard work with the 50th TFW saw rapid improvements in weapon delivery. Purifoy recalls: "When I got to the 10th TFS, we just completed our NATO TACEVAL (Tactical Evaluation) qualifications. We put about 30 airplanes across the target over a period of a week. The average error for the whole squadron was under a metre and bomb time on target was less than two seconds off desired TOT. And this is from toss manoeuvres from up to four nautical miles distant."

Ramming the Hahn Wing's results home was the fact that in October 1983 six pilots from the 50th TFW took their mounts to the Gunsmoke air-to- ground gunnery ➤

Aggressor pilots are trained to fly and fight like Russian-trained pilots.

Wheels up on another ACM sortie for the Aggressors.

The US Navy moved to the F-16C following the phase-out of the F-16N.

The Navy, like the Aggressors, like to go for colourful paint schemes.

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Under-fuselage ECM pod and training rocket pods are toted by these F-16s.

A 'Wolfpack' F-16 with centreline tank and Mk84s.

Bitburg's F-15 Eagles often worked with Hahn's F-16s.

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F-16s utilising a KC-135 air-to-air tanker.

and bombing contest. They were overall winners, as well as taking the honours in the 200ft level bombing competition and the 30-degree dive-bombing competition.

The 50th TFW would carve their own glorious history in USAFE and further afield over the years following the introduction of the F-16A and B. In 1986 the Wing converted over to the new F-16C/D model, with APG-68 radar and (finally) a medium- range missile capability. They also participated in Desert Shield and then Desert Storm in 1990/91, before being deactivated on September 30, 1991.

Advanced Aggressor, Adversary

The USAF's aggressor squadrons came about as a result of some poor performance in the early part of the conflict in South East Asia.

Dumb iron bombs were the normal load for F-16s in USAFE.

Experienced hands like Robin Olds knew the score. A Second World War ace on P-38 Lightnings and P-51 Mustangs, he'd led Uborn's 8th TFW to success from September 1966 to the following September. He knew that to fight air-to-air you had to practice it – and against aircraft other than your own.

"The air force just wanted guys who could take off, do the job and not crash," he once said. This was again the case when the offensive operations started again up north in early 1972, but not so the US Navy. On the quiet after taking up his post at the Air Force Academy, Olds would get some unofficial training with the US Navy.

In his autobiography he wrote: "To get in some real flying I'd head down to San Diego and fly with the Navy at Miramar. Damn, those guys were for real! It was dog-eat-dog – no pussyfooting around! Their air-to-air programme was realistic and aggressive. They had their act together on training."

This was of course as a result of the US Navy's own issues over Vietnam – they weren't going to suffer that way again. Meanwhile, Olds was sent back to Vietnam to check on

This F-16 is carrying a BDU-38 practice B61 tactical nuclear bomb.

the readiness of the USAF in both air-to-air and air-to-ground missions and what he saw shocked him so much that he reputedly told his superior General John D Ryan that the USAF forces in theatre in Vietnam "couldn't fight their way out of a wet paper bag". Olds offered to be reduced in rank if he could be sent back to South East Asia and rectify the situation but was not taken up on his offer. He retired in 1973.

History would prove Olds right. While the Navy had learned the earlier lessons from Vietnam the USAF had to learn the hard way – again. As a result, 18 months of study on combat in South East Asia led to The Red Baron I and II reports. They explained what much of what the 'old hands' already knew. When it came to air combat the pilots would only dogfight each other – in the same aircraft. And even then sometimes this was frowned upon and could end up with the pilot losing his wings.

Over in Europe this was not so much the case. The dissimilar aircraft used by the various NATO forces in the 1960s and 1970s meant that aircraft were often 'bounced' by RAF Hunters, Lightnings, West German F-104s and USAFE types.

The Red Baron reports effectively said that air combat training needed to be realistic and preferably against aircraft of dissimilar type. It also said that intelligence needed to trickle down to operations level in the squadron, keeping them abreast of all the latest tactics and capabilities of any potential enemy and also that training needed to help front-line pilots get the best out of the equipment they were trying to employ.

Out of this came the Dissimilar Air Combat Training programme or DACT. Simply setting up various DACT arrangements between squadrons, commands, service branches or even with friendly countries wouldn't do the job. Sure, it would be interesting to take on RAF BAC Lightnings, or French Mirages – but the level of the threat and the tactics employed had to be the same (or near as dammit) to that used by and exported from the Soviet bloc.

This meant pilots had to fly the same way – even if it meant getting beaten by the opposition. The 'threat manual' had to be kept bang up to date (which meant regular liaising with the intelligence community) and the strict use of GCI or 'Ground Control Intercept' so favoured by the Soviets (and customers such as Vietnam) had to be slavishly adhered to and replicated.

From this came the formation of 'Aggressor' squadrons, the first of which was formed at Nellis Air Force Base, Nevada in 1972. The choice of aircraft was what was on hand at the time – the Northrop T-38 Talon. This was the standard, supersonic advanced trainer in use with the USAF. Twenty T-38s were borrowed from Air Training Command and – eventually – painted up to look suitably 'warlike', normally in colours seen on Soviet bloc tactical fighters.

As good as the Talon was, what was needed was a proper fighter aircraft, preferably with a simple radar and with

➤

A 10th TFS F-16C in 1987 with practice Mk84s.

The F-16 and F-4G would form a 'hunter-killer' anti-SAM team following the F-4E's retirement in Europe.

the end of the war in Vietnam in 1975, came the windfall of around 100 Northrop F-5E Tiger II, single-seat fighters that were going to be used in the conflict in South East Asia. As the news of the good work done by the first unit – the 64th Aggressor Squadron – filtered down others were formed, most notably the 65th (also at Nellis) followed by the 527th Tactical Fighter Training Aggressor Squadron, formed in 1976 at RAF Alconbury and the 26th Aggressor Squadron formed at Clark Air Force Base in the Philippines.

The activation of the aggressors also saw a marked increase in the 'train as you fight, fight as you train' dictum. From this came the various flag exercises held even to this day. Red Flag began in 1975, following The Red Baron III report, where it showed that – in Vietnam – pilot survivability soared when 10 successful missions had been accomplished. Red Flag (and the subsequent other 'Flag' exercises) aims to give pilots those 10 realistic missions in a variety of environments – albeit in peacetime. The popularity has led over the years to invites from the US to many other nationalities to take part, including the RAF, the Indian Air Force, the Israeli Air Force, the Greek Air Force and many more.

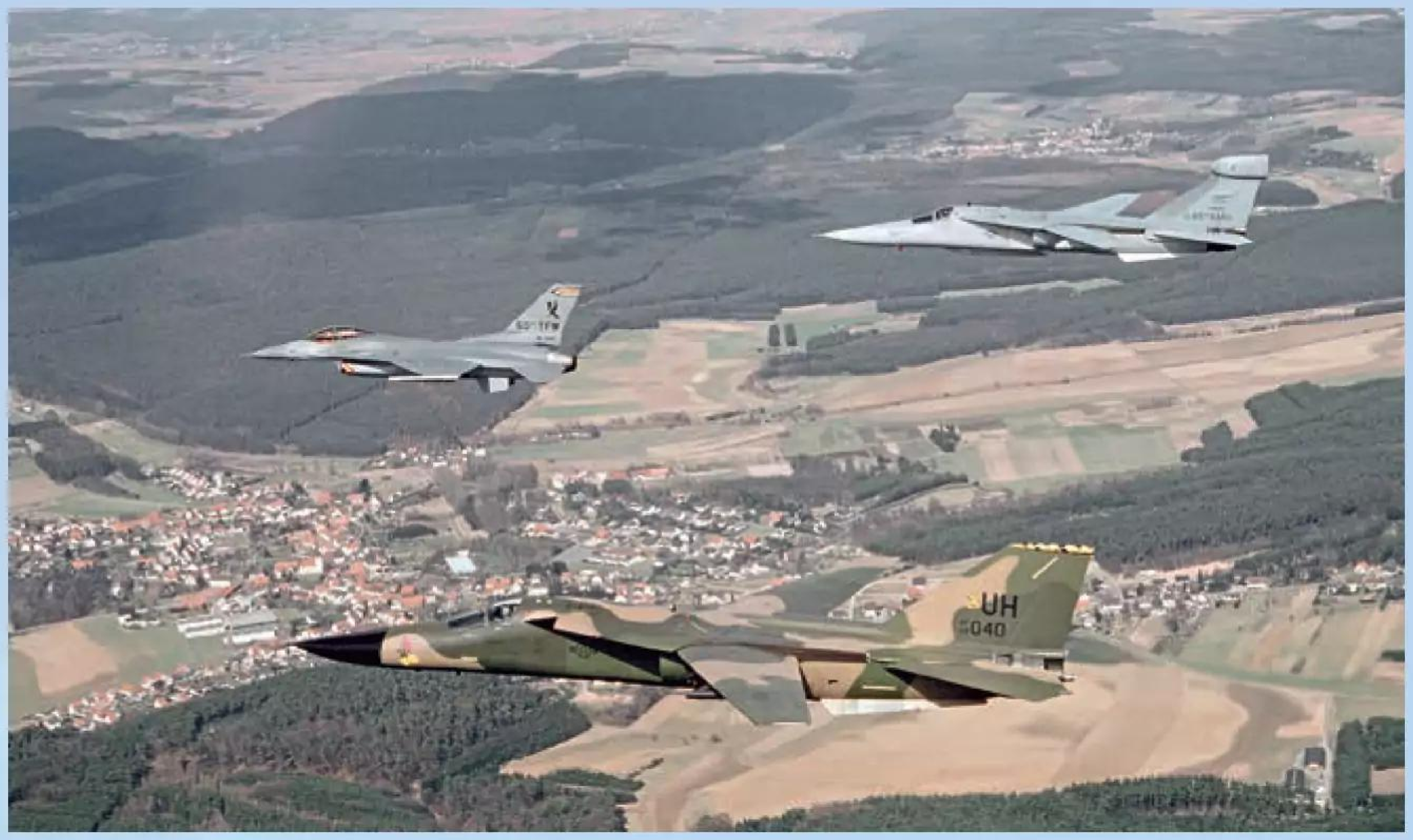
For a decade until the mid-1980s the F-5E was the workhorse of the Aggressor squadrons, replicating – with some degree of accuracy – the main threat faced at the time – the MiG-21 – but as the 'threat manual' got updated so the weapons employed by the Aggressors had to too. And besides, a decade of use in the high-G environment aged airframes quicker than those out on the front-line.

The USAF and the US Navy looked at procuring the same 'new' equipment, but while the Navy went for a stripped-down specific model (the F-16N) the USAF took an off-the-shelf option with the F-16C. The adoption of the F-16C wasn't the perfect scenario for a number of reasons. Firstly, the whole point is 'dissimilar', which the F-16 is not, if you're flying an F-16 in the USAF.

Thankfully, the addition of some Soviet warpaint and the later adoption of F-15 airframes helped. Other issues included the worry that the F-16C couldn't replicate the high-alpha dogfight attributes of the MiG-29 Fulcrum, or the off-boresight capability of some of its missiles and its passive infrared tracking system. The big problem was numbers. With insufficient F-16 airframes available the 65th Aggressor Squadron was deactivated in 1988.

In Europe the 527th moved from Alconbury to RAF Bentwaters and kept their F-16Cs in standard F-16 camouflage, but the large, red Soviet-style 'bort' numbers often painted on the intake trunking remained.

Back in the mid-1990s, Colonel Doug Melson, a 4000-hour fighter pilot with 1000 instructor hours under his belt heaped praise on the F-16C. He said: "If we fought as ourselves using the F-16 to its best advantage



General Dynamics aircraft filled important roles during the Cold War. Here is an F-111F (foreground) with an EF-111 Raven and F-16.

Airman Sylvia Wagner inserts a HUD video tape into the F-16 before the pilot climbs aboard.

we would win 90% of the time and you would see the disparaging effect that would have on the young fighter pilots we were teaching.

"Even when we stay within the Soviet aircraft's limitations there will be many times when we can win the engagement easily, but we don't press home the attack. It's about teaching. Sometimes giving the young pilot the chance to 'live' means we can talk about it back on the ground: although if he's really cocky, shooting him down might just be the best thing!"

The constant demands on the USAF over many conflicts has shown that the best training gives the best results out on the cutting edge – even if today's 'modern wars' aren't given to dogfighting – but Desert Storm showed that it worked.

With the deactivation of the 65th Aggressor squadron late in 2014 came a shift from using both the F-15C and the F-16 to – now – just the F-16.

Meanwhile, the US Navy still uses versions of the F-5 Tiger II as well as the Boeing F/A-18 Hornet and the F-16C as adversary aircraft.

Time will tell if this is the right tactic for the USAF, especially against the new breed of 'Blue Air' with the likes of the F-22 Raptor and the F-35 Lightning II joining the latest Red Flag exercises, not to mention the more-modern 'foreign' fighters like the Rafale and Typhoon taking part. And with the USAF's current crop of F-16Cs being the oldest Block 25s and 32s, perhaps a limited-run upgrade to a 'modest F-16V' level be the future answer?

The Navy's F-16s

It could have all been so different. Instead of the F-16Ns that the US Navy eventually used for adversary training they could have had Vipers flying off the decks of carriers by the early 1980s.

Following on from the F-16's win over the YF-17, the US Navy was being pushed to accept its own Light Weight Fighter, ostensibly to replace the aging A-4 Skyhawk, F-4 Phantom II and (younger) A-7 Corsair II. With the thought of another lucrative contract in mind, General Dynamics teamed up with Ling-Temco Vought (LTV) – creator of the F-8 Crusader and A-7 Corsair – while Northrop teamed up with McDonnell Douglas of A-4 and F-4 fame.

Vought and GD came up with three proposals for a shipboard F-16: the V-1600, V-1601 and V-1602. Each would have a different engine, a Pratt & Whitney F401, Pratt & Whitney F100 and General Electric F101 respectively. ➤

The AN/ALQ-131 ECM pod was a common fit for F-16s.

A brace of F-16s from the 50th TFW at Hahn.

As well as in Europe, the F-16 was at the tip of the spear during the Cold War in the Korean peninsula.

A 13th Tactical Fighter Squadron F-16A is seen on a snowy flightline in 1985.

Much was changed to get the F-16 close to carrier-capable. The F-401-powered V-1600 was longer than an F-16A, with a stretched fuselage, bigger wingspan, flaps and horizontal tail. The landing gear was strengthened, twin-nosewheels added at the front, along with catapult bar. The radar was to be a pulse-doppler set married to the medium-range AIM-7 Sparrow missiles carried on wing pylons. The V-1600 was going to be around 10,000lb heavier than the standard F-16A.

The V-1601 was more like the standard F-16A, sharing the same F100 powerplant. This too had a fuselage stretch, a larger (but not as large as V-1600) wing and reduced fuel capacity, while the V-1602 was to use the heavier GE engine, a further reconfigured wing and widened fuselage. The capacity to use the Sparrow family of missiles was vital to the US Navy's requirement, hence mock-ups and artists' impressions showed them being carried under the wings or conformally on the fuselage.

History shows that the McDonnell/Northrop development of the YF-17 seemed more suited to the US Navy's needs, with its twin-engined safety, but you can't help wonder 'what if' one of these three versions had made it onto the carriers of the early 1980s. Maybe Tom Cruise wouldn't have been flying a Tomcat in TOPGUN…

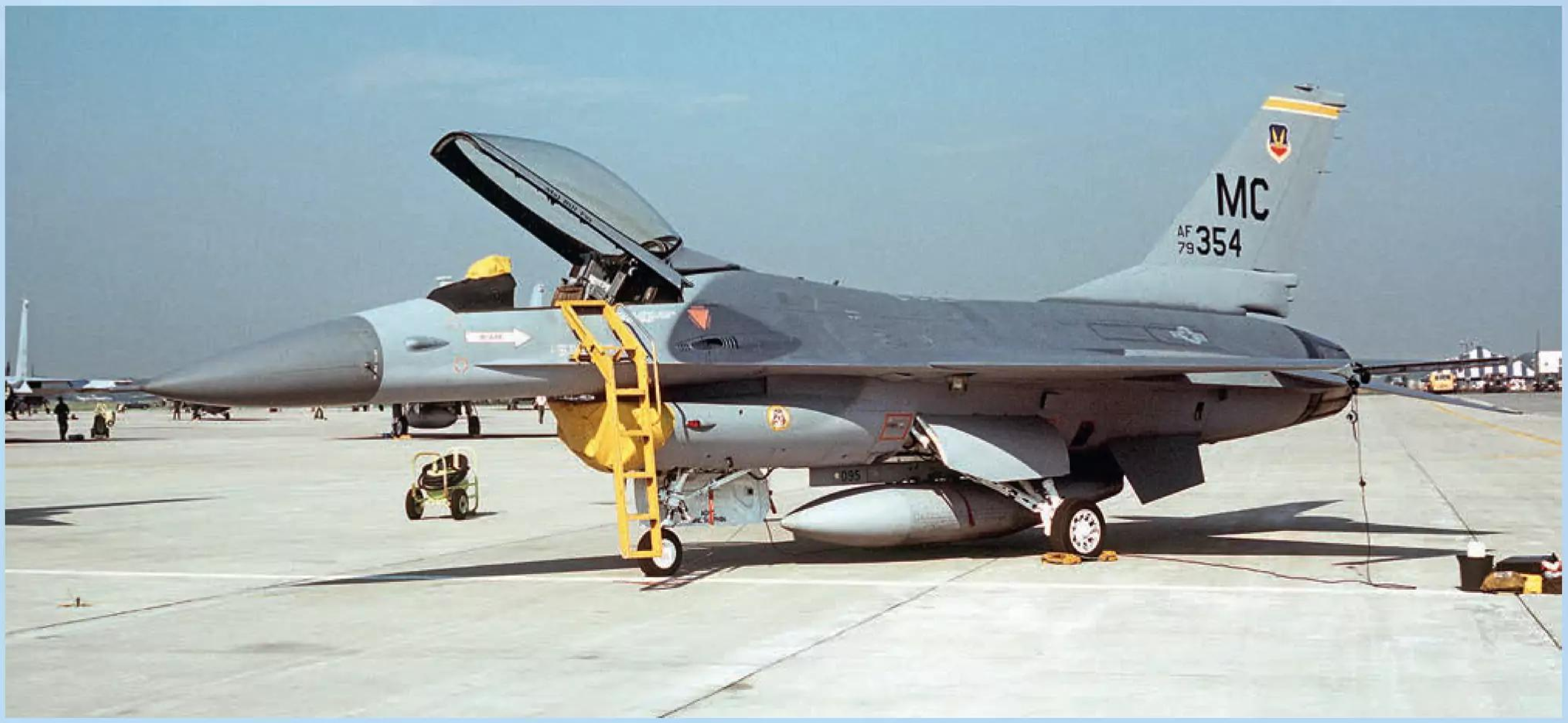
Enter the F-16N

The US Navy finally did get to fly the F-16 and it was one hot ship, but first a brief history lesson. The US Navy – like the USAF – was shocked by its relative poor performance air-to-air in Vietnam. So, during a pause in the air battles during 1968 the Ault Report into the performance of the air-to-air missiles in the first three years of the conflict was set up and the findings were sobering. The most striking were the fact that many missiles fired by crews in Vietnam weren't made inside of launch or kill parameters and that proper employment of the aircraft they were flying often wasn't made.

To this end the creation of the Navy Fighter Weapons School or 'TOPGUN' was made and the US Navy made their own adversary squadrons, using the Northrop F-5E Tiger II and the ubiquitous A-4 Skyhawk. The NFWS was then to hold a number of 'power projection' courses during the year for a number of crews from various squadrons who would then go back to the fleet and pass on their knowledge and experiences. It worked, as the US Navy would record an F-4J crew as their first aces of the campaign.

The US Navy made a decision in 1985 to adopt its own version of the then-current F-16 in service with the USAF. The US Navy urgently needed something to bridge the gap between the Northrop F-5s and up-engined Skyhawks they were using in the adversary role. With the mid-1980s threats changing from the MiG-21 and MiG-23 to the latest MiG-29 Fulcrum and Sukhoi Su-27, like the USAF's Aggressor squadrons, the US Navy needed an agile, more capable threat replicator.

This was to come in the shape of the F-16N. Based on the F-16C/D Block 30, it was powered by the General Electric F110-GE-100 turbofan fed by the small-inlet intake, with the APG-66 radar. The N had the 20mm Vulcan cannon removed along with a number of avionics, but they did



A 56th Fighter Intercept Group F-16 in 1987.

have radar warning receivers and chaff/flare dispensers.

Free from the shackles of weight for the carrier role and without much land-based F-16 gear, the emergent F-16N was a prize fighter stripped for purpose. A total of 26 aircraft were made, 22 single- seat F-16Ns and four two-seat TF-16Ns.

Of course the F-16 wasn't originally the first choice, but it had to be a dissimilar one. With such a long connection with Northrop's F-5E and F-5F family, initially it was the F-20 Tigershark that was in the running for the Navy's fourth-generation adversary, but with no bulk buyer on the horizon, it would have been expensive to fire up the production line for just 20-30 aircraft.

Of course the F-16 was in production and in the very early 1980s there already was a downgraded F-16 available: the F-16/79, powered by the venerable J79 turbojet. Rumours have it that TOPGUN instructors did get to fly the F-16/79 and found it good enough for the job. As time marched on, Northrop could only let Navy instructors fly the F-20 simulator and then the F-16/79 was dismissed as no orders would be likely with 'full fat' F-16As now being allowed for foreign sale by the Reagan administration. Sadly, by October 1984 the F-20 programme had suffered a loss of one of the prototypes and despite Northrop touting the machine across the globe, no production start orders were forthcoming. As the US Navy didn't need a large amount of dissimilar adversary aircraft, the announcement was made in 1985 and the F-16N was born and produced in very modest numbers.

The F-16N and TF-16N had a tough, 11-year career with the US Navy, with the first being delivered in 1987 and the last being retired in 1998. With them often being flown in 'clean' configuration, with weight down (250lb was lost by deleting the gun) and with a hi-G nature of their jobs, it wasn't surprising that fatigue led them to be retired early.

So, it was a 'hot-ship' but how hot? Paul Nickell was a former F-14 Tomcat pilot and became an instructor at TOPGUN and flew the F-16N. He says: "The jet would do supersonic cruise (super-cruise) in the configuration that we flew it. Generally slick, at altitude (no pylons or missiles – just an ACMI pod on the right wing tip) it could go supersonic with no afterburner with the help of its powerful General Electric engine.

"This was something we had to keep in mind transiting around the country. Unlike the F-14, there was not a noticeable reduction in acceleration as you approached Mach 1. Bottom line, it was sleek and it was fast. I've personally seen it achieving Mach 2 and a burner take-off in the stripped-down N was the next best thing to a cat-shot off the deck."

For some the N model was perhaps still a little too basic considering the rumours coming out of Eastern Europe over the beyond visual range (BVR) capability of the Fulcrum and Flanker. The F-16N had the Westinghouse APG-66 from the standard F-16A/B, but the leap in capability meant that – if well flown (and they were) the F-16N could replicate any real threat from MiG-17-up. Nickell adds: "The F-5 could simulate the MiG-23 if it stayed fast and made large arcing turns. However, neither the A-4 nor F-5 could properly simulate the fourth generation threats.

"The beauty of the F-16N was that it could simulate all of these threats well if flown properly by the adversary pilot. To simulate the MiG-17, we simply flew the F-16 full-up, except we never used the afterburner. To simulate the MiG-21 we flew it full-up, except we would select no more than zone two in afterburner. To simulate the MiG-23 we flew the F-16N at the speed of heat and made no turns greater than about 4g. On top of that, we could simulate the fourth generation Soviet fighters, the Su-27 and MiG-29, if we flew it full up, full burner and at any speed." ■

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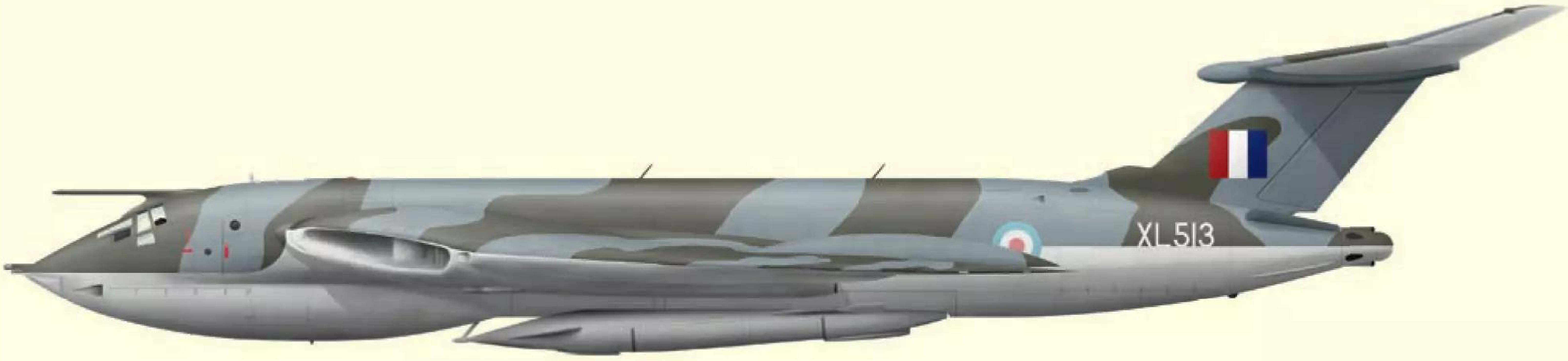

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